Social Comparison and Body Image in Non or Infrequent Exercisers and Exercisers

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ABSTRACT

Body image refers to an individual's internal representation of his/her outer self (Cash, 1994; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). It is a multidimensional construct which includes an individual's attitudes towards his/her own physical characteristics (Bane & McAuley, 1998; Cash, 1994; Cash, 2004; Davison & McCabe, 2005; Muth & Cash, 1997; Sabiston, Crocker, & Munroe-Chandler, 2005). Social comparison is the process of thinking about the self in relation to others in order to determine if one's opinions and abilities are adequate and to assess one's social status (Festinger, 1954; Wood, 1996). Research investigating the role of social comparisons on body image has provided some information on the types and nature of the comparisons that are made. The act of making social comparisons may have a negative impact on body image (van den Berg et al., 2007). Although exercise may improve body image, the impact of social comparisons in exercise settings may be less positive, and there may be differences in the social comparison tendencies between non or infrequent exercisers and exercisers.

The present study examined the nature of social comparisons that female college-aged non or infrequent exercisers and exercisers made with respect to their bodies, and the relationship of these social comparisons to body image attitudes. Specifically, the frequency and direction of comparisons on specific targets and body dimensions were examined in both non or infrequent exercisers and exercisers. Finally, the relationship between body-image attitudes and the frequency and direction with which body-related social comparisons were made for non or infrequent exercisers and exercisers were examined. One hundred and fifty-two participants completed the study (n = 70 non or

infrequent exercisers; $n = 82$ exercisers). Participants completed measures of social physique anxiety (SPA), body dissatisfaction, body esteem, body image cognitions, leisure time physical activity, and social comparisons.

Results suggested that both groups (non or infrequent exercisers and exercisers) generally made social comparisons and most frequently made comparisons with same-sex friends, and least frequently with same-sex parents. Also, both groups made more appearance-related comparisons than non-appearance-related comparisons. Further, both groups made more negative comparisons with almost all targets. However, non or infrequent exercisers generally made more negative comparisons on all body dimensions, while exercisers made negative comparisons only on weight and body shape dimensions.

MANOVAs were conducted to examine if any differences on social comparisons between the two groups existed. Results of the MANOVAs indicated that frequency of comparisons with targets, the frequency of comparisons on body dimensions, and direction of comparisons with targets did not differ based on exercise status. However, the direction of comparison of specific body dimensions revealed a significant (F (7, 144) = 3.26, $p < .05$; $\eta^2 = .132$) difference based on exercise status. Follow-up ANOVAs showed significant differences on five variables: physical attractiveness (F (1, 150) = 6.33, $p < .05$; $\eta^2 = .041$); fitness ($F(1, 150) = 11.89, p < .05$; $\eta^2 = .073$); co-ordination ($F(1, 150) = 5.61, p < .05$; $\eta^2 = .036$); strength ($F(1, 150) = 12.83, p < .05$; $\eta^2 = .079$); muscle mass or tone ($F(1, 150) = 17.34, p < .05$; $\eta^2 = 1.04$), with exercisers making more positive comparisons than non or infrequent exercisers.

The results from the regression analyses for non or infrequent exercisers showed appearance orientation was a significant predictor of the frequency of social comparisons

($B = .429$, $SE_B = .154$, $\beta = .312$, $p < .01$). Also, trait body image measures accounted for significant variance in the direction of social comparisons ($F(9, 57) = 13.43$, $p < .001$, $R^2_{adj} = .68$). Specifically, SPA ($B = -.583$, $SE_B = .186$, $\beta = -.446$, $p < .01$) and body esteem-weight concerns ($B = .522$, $SE_B = .207$, $\beta = .432$, $p < .01$) were significant predictors of the direction of comparisons. For exercisers, regressions revealed that specific trait measures of body image significantly predicted the frequency of comparisons ($F(9, 71) = 8.67$, $p < .001$, $R^2_{adj} = .463$). Specifically, SPA ($B = .508$, $SE_B = .147$, $\beta = .497$, $p < .01$) and appearance orientation ($B = .457$, $SE_B = .134$, $\beta = .335$, $p < .01$) were significant predictors of the frequency of social comparisons. Lastly, for exercisers, the results for the regression of body image measures on the direction of social comparisons were also significant ($F(9, 70) = 14.65$, $p < .001$, $R^2_{adj} = .609$) with body dissatisfaction ($B = .368$, $SE_B = .143$, $\beta = .362$, $p < .05$), appearance orientation ($B = .256$, $SE_B = .123$, $\beta = .175$, $p < .05$), and fitness orientation ($B = .423$, $SE_B = .194$, $\beta = .266$, $p < .05$) significant predictors of the direction of social comparison.

The results indicated that young women made frequent social comparisons regardless of exercise status. However, exercisers made more positive comparisons on all the body dimensions than non or infrequent exercisers. Also, certain trait body image measures may be good predictors of one's body comparison tendencies. However, the measures which predict comparison tendencies may be different for non or infrequent exercisers and exercisers. Future research should examine the effects of social comparisons in different populations (i.e., males, the obese, older adults, etc.). Implications for practice and research were discussed.

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CHAPTER ONE: LITERATURE REVIEW

Body Image

Body image refers to an individual's unique internal representation of his or her outer self (Cash, 1994; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). It is a multidimensional construct which includes an individual's attitudes (i.e., evaluation, investment, thoughts, and feelings) towards his or her own physical characteristics (Bane & McAuley, 1998; Cash, 1994; Cash, 2004; Davison & McCabe, 2005; Muth & Cash, 1997; Sabiston, Crocker, & Munroe-Chandler, 2005). Physical appearance, and in particular body weight and shape, are significant influences on body image. Body image is not only limited to what people look like. Rather, it also incorporates dimensions such as fitness level, health status, physical skills, and body functioning (Grogan, 2008). Cash (2004) also differentiated between people's evaluations of their bodies (i.e., their level of satisfaction or dissatisfaction with their bodies), and their investment in their bodies (i.e., the cognitive importance they place on body image).

Body image dimensions. As noted above, body image is multidimensional and includes cognitions and affect related to the body. The cognitive dimension includes attitudes, thoughts, and beliefs about one's body (Bane & McAuley, 1998; Grogan, 2008; Sabiston et al., 2005). This dimension is the most commonly assessed aspect of body image and includes both evaluation (i.e., satisfaction or dissatisfaction) and investment (Bane & McAuley). The affective dimension of body image assesses feelings associated with the body, such as anxiety, discomfort, or pride (Bane & McAuley). Although affect related to body image can be either positive or negative, most of the research has tended to focus on the negative feelings associated with body image, in particular anxiety, as

these effects may be more common and serious (Garner, 1997; Grogan; Keeton, Cash, & Brown, 1990).

Body image disturbances. Body image varies along a continuum from healthy body image to severe body image disturbances. An individual with a healthy body image has few concerns about his or her body. At the other end of the spectrum, extreme body disturbances occur when there is severe concern in one or more of the dimensions (Bane & McAuley, 1998). In between these extremes, people experience varying levels of body image concerns, often in the form of dissatisfaction with one's body as well as negative thoughts, and feelings about the body (Bergstrom & Neighbors, 2006; Grogan, 2008). Body image is a critical issue in North America because disturbances can lead to significant impairments that include a decline in social, occupational, and psychological functioning. For example, mild to moderate body image disturbances have been associated with excessive exercise, sedentary behaviours, social anxiety, and depression (Bane & McAuley; Hausenblas & Fallon, 2006). Body image disturbance has also been associated with health risk behaviours such as elective cosmetic surgery, eating disorders, and anabolic steroid use (Grogan, 2008).

In North America, rates of body image disturbances are quite high, and have been increasing over the past 25 years. Garner (1997) conducted a series of studies examining body image in large-scale population based surveys. Between the initial wave of the survey in 1972, until the most recent survey in 1996, the rates of body dissatisfaction increased for both men and women. This finding was consistent across all age groups. In women, rates of dissatisfaction with overall appearance increased from 25% in 1972 to 56% in 1997. This same trend occurred in dissatisfaction with all body parts, including weight, muscle tone, abdomen, and hips/thighs. Although the rates of dissatisfaction for

men were generally lower, the same increase was seen in all aspects of body dissatisfaction. Furthermore, the gap in dissatisfaction between men and women decreased during this time period. The results of these studies suggest that body dissatisfaction is a prevalent concern in Western society. A limitation of the study by Garner (1997) was that it only examined dissatisfaction with appearance, and did not consider a more comprehensive definition of body image (e.g., feelings associated with body image disturbances).

One of the most common explanations for body dissatisfaction is found in Sociocultural Theory (Thompson et al., 1999). Sociocultural Theory states that the current societal standards for beauty in North American women emphasize the importance of thinness as well as other physical attributes (e.g., attractiveness and youthfulness), which are almost impossible to achieve (Thompson et al., 1999). If women are unable to meet these cultural standards because they are obese, they will be thought of as unattractive and are often treated as if they have committed some type of "personal misbehaviour" (Thompson et al., 1999). These standards are heavily influenced by mass media, so it is almost impossible to avoid these messages. Accordingly, Sociocultural Theory suggests that constant exposure to an ideal that is impossible to achieve leads women to feel dissatisfied with their bodies. However, Sociocultural Theory cannot account for why some women experience negative body image, while others do not. One theory that accounts for why women experience negative body image is Social Comparison Theory (SCT; Festinger, 1954).

Social Comparison Defined

Wood (1996) defined social comparison as the process of thinking about the self in relation to another person or group of people. The social comparison process can occur as a result of either conscious or unconscious thought. Wood suggested that the core feature of social comparison is thinking about social information, whether it is real or whether it is constructed, and assessing one's own social status relative to that target (e.g., I am too heavy because I weigh more than models in magazines). An example of a real comparison is a comparison with a specific person or group, and an example of a constructed comparison is with a stereotype of a group, such as all models are thin and tall.

Process of social comparison. Wood (1996) also identified three major processes that make up social comparison. The first stage is acquiring social information in which a particular target or type of social information is selected for further observation. Alternatively, if social information is encountered by chance, an individual would have to decide if the target is relevant. Individuals may also construct social information based on a stereotype of certain groups. The second stage is thinking about the social information in relation to the self. In this stage, people identify similarities and/or differences between the self and the target, as well as make judgements about their relative standing in comparison to the target. The final stage in the social comparison process is reacting to the social information. These reactions can include both cognitive and affective (Wood, 1996). A cognitive response may include self-evaluations such as questioning "I am overweight compared to my peers" based on the information. Affective responses include

feelings such as pride or anxiety where people for example may feel ashamed because they are overweight compared to their peers.

As Wood (1989) noted, social comparisons are not always deliberate and conscious. Social comparisons are often encountered and occur even when people may not want to compare themselves to others. For instance, if a student is sitting with a group of her peers who are all discussing their weight, she may think about her own weight relative to them, whether she wants to or not. Second, Wood (1989) also suggested that comparisons may be made unconsciously. That is, without even realizing it, people may compare themselves to others, such as with a television character.

Social Comparison Theory (SCT)

SCT was first formally described by Festinger (1954). In his seminal paper, Festinger described SCT by outlining a series of hypotheses and where available, providing supporting empirical evidence. At the core of SCT, Festinger stated that people have an innate drive to evaluate their opinions and abilities, to determine if their opinions and abilities are adequate. Festinger suggested that people engage in social comparisons to gain information about the self for evaluative purposes (i.e., self-evaluation). These determinations are important to people because their judgements of opinions and abilities by others can influence their subsequent cognitions and affect. Therefore, self-evaluations provide a tool to assess whether one is likely to receive positive or negative evaluation from others.

People have a preference to use an objective standard in order to evaluate their social standing (Festinger, 1954). For example, to assess if one's weight is acceptable, height and weight charts provide objective standards in the form of societal averages.

However, it is not always possible to evaluate oneself against an objective standard because one may not exist (e.g., am I thin enough?) and in these cases, people may look to make comparisons against others (i.e., social comparisons). For instance, if people want to know if their weight is acceptable, they may look to see if they are heavier, thinner, or the same weight as others. Any comparison, whether objective or subjective, makes judgements about the self more stable.

Festinger (1954) made several hypotheses about the target of social comparison (i.e., with whom people choose to compare the self). According to Festinger's original conceptualization, the target of social comparison is most likely to be someone who is similar to the self. For example, when women make a social comparison based on weight, they are likely to choose someone who is similar in age, gender, and height (e.g., a peer) rather than someone who is very different (e.g., a supermodel). A more similar target allows an individual to more accurately evaluate his or her own characteristics compared to others. As the target becomes more dissimilar, the social comparison information becomes less useful (Festinger). For example, comparing weight with a supermodel does not provide useful information because supermodels are unlike the majority of the population. They are physically very lean and their lifestyles are very different (e.g., models may eat very little and exercise more often) than most people to ensure that their bodies look ideal because their work depends on it. According to Festinger, comparisons with dissimilar others are not very useful for gaining information about oneself and therefore result in less stable evaluations of the self.

Upward social comparisons. Festinger (1954) also described the type, or direction, of social comparison. He suggested that comparisons are generally upward with a superior target so that people rate themselves negatively. In general, when a target

is dissimilar to a person and a discrepancy exists, an attempt is made to resolve that discrepancy. Upward comparisons allow people to try to make themselves better as they attempt to reduce the difference between themselves and the superior target (Wood, 1989). For instance, if a girl thinks she is overweight compared to her friends, she may diet to lose weight to reduce the discrepancy in size. These upward (or negative) comparisons are consistent with Western culture, which generally promotes attempts to improve oneself and be better than others. For example, one may strive to do more or try to appear more "ideal" physically.

However, sometimes it may be very difficult, or even impossible, to improve some aspect of oneself. If an individual compares herself with a supermodel on appearance, the discrepancy is likely large and unachievable, as she will be unable to grow taller or become as thin. According to Festinger (1954), several consequences may arise from large discrepancies or those which are unable to be reduced. Often, if there are very large and unchangeable discrepancies between oneself and the comparison target, the individual will simply stop making these comparisons. Alternatively, people may also change the target to one that is more similar to the individual making the comparison (Festinger). Although posited to encourage people to better themselves, these upward social comparisons can remind people of their inferior status compared to that of others, which may increase psychological distress and lead to more negative affect (Festinger; Lockwood & Kunda, 2000). In addition, Festinger also suggested that anything that increases the importance of, or attraction to a target, or makes an ability or opinion more important, will further increase the desire to reduce the discrepancy between the self and the target.

Recent Developments in SCT

While Festinger's (1954) original conceptualizations have been very influential, more recent research has suggested that not all of the original tenets were correct and have further developed SCT.

Motives for social comparison. Festinger (1954) suggested that social comparisons occurred for self-evaluation purposes. Comparisons for self-evaluation occur when people compare themselves with others to define their ranking in relation to others in their social environment to get an accurate assessment of themselves, their opinions, or abilities (Wood, 1989). These rankings can either be better, worse, or the same as others. However, other motives have subsequently been identified including self-improvement and self-enhancement (Wood, 1989).

Comparisons for self-improvement occur when someone compares himself or herself with others who are better off (i.e., upward social comparison) to motivate the individual to be better. This motive is a consequence of the upward drive described by Festinger (1954). For example, if people compare their weight with that of a supermodel, they would realize that they weigh more and are less attractive. However, the self-improvement motive would lead individuals to attempt to lose weight to achieve the 'ideal.' Also, people engage in comparisons for self-improvement because they strive to improve the skills they already possess (Helgeson & Mickelson, 1995). People are able to watch others' performance and learn new and more efficient techniques to compliment their own performances. Although upward social comparisons are ideal for self-improvement, people may not always use comparison information for improvements, as

upward social comparisons may lead to feelings of inferiority or helplessness (Wood, 1989).

The self-enhancement motive refers to comparisons that are made when people feel threatened to protect or enhance their self-esteem (Jones & Buckingham, 2005; Thornton & Moore, 1993). For example, someone may compare his or her weight to someone who is heavier and think "at least I do not weigh that much." People who engage in social comparisons for self-enhancement purposes generally want to feel better about themselves (Helgeson & Mickelson, 1995). They achieve this goal by making comparisons that show they are better off than someone else (e.g., thinner). This last motive is an important extension of SCT, because it suggests that, contrary to Festinger's (1954) original hypothesis, not all comparisons that are made are upward.

Although Festinger (1954) initially hypothesized that almost all social comparisons were made with a superior, or upward target, more recent research has suggested that there is another type of social comparison, a downward social comparison. Wills (1981) described downward social comparisons, or positive social comparisons, as a way in which a person may increase subjective well-being by making comparisons to those who are less well-off (i.e., self-enhancement). The targets of these downward social comparisons tend to be lower status individuals, unlike upward social comparisons which are made to superior others.

There are two types of downward social comparison: passive and active (Wills, 1981). Passive downward social comparisons occur when available information suggests the target is less fortunate and already exists. For instance, a classmate who is already teased for her weight would serve as a target for passive social comparison. In contrast, active downward social comparisons occur when someone "creates" a target that is

worse-off by derogating or harming a target. For instance, an adolescent who makes fun of a peer's appearance actively creates an inferior target. Buunk and Gibbons (2007) have suggested that passive downward social comparisons are more common than active downward social comparison.

Effects of social comparison. Initially, Festinger (1954) suggested that upward social comparisons would most likely result in improvements in one's own abilities, as the individual tries to make himself or herself better. However, research has suggested that upward comparisons may lead people to feel worse about themselves and experience negative affect, because they perceive that they are inferior to the target on the comparison characteristic of interest (Wood, 1989).

It was previously thought that downward comparisons lead to improvements in affect, self-esteem, and self-efficacy because the individual perceives that he or she is better-off than the comparison target (Wills, 1981). However, Buunk, Collins, Taylor, VanYperen, and Dakof (1990) suggested that it is not the direction of the comparison that leads to positive or negative outcomes of social comparison, but rather the interpretation of the comparisons. Both upward and downward comparisons could lead to either positive or negative effects. For example, upward comparisons could be interpreted in one of two ways. The first is that other people are better off than the comparer, leaving people to feel inferior or bad about themselves (a negative outcome). Alternatively, the individual making comparisons may believe that he or she could, or would, become better off if the target is superior, as they themselves could become better (a positive outcome; Buunk et al.; Festinger; Lockwood & Kunda, 2000). Similarly, downward comparisons also can lead to two interpretations. The first is that the target is worse off than the individual, making the individual feel relatively better-off (a positive outcome). The

second is that the individual could become worse off in the future because they could fall to the same level as the target, resulting in a negative outcome (Wills).

Buunk et al. (1990) tested the hypothesis that both types of social comparison could lead to either positive or negative consequences in a series of two studies, one involving cancer survivors and the second involving married individuals. Across these two studies, the most frequently occurring social comparisons were downward comparisons leading to positive affective outcomes, followed by upward comparisons leading to positive affective outcomes. The least frequently occurring comparisons were upward comparisons leading to a negative outcome (i.e., feeling bad). Buunk et al. concluded that the direction of comparisons is not linked to a specific positive or negative affective outcome. However, they also concluded that positive affective responses are the most common outcomes of social comparison.

Types of social comparison evaluation. Regardless of the direction (i.e., upward or downward) of the comparison, both imply a similarity to the target. However, the target can differ with respect to its significance (or importance) to the individual. There are two types of social comparison evaluations: universalistic and particularistic (Miller, Turnbull, & McFarland, 1988). A universalistic target refers to someone who is similar to the comparer but does not hold a special or meaningful bond to the person (Miller et al.). It is an evaluation determined by how one compares with others in general. When people compare themselves with a universalistic target, they are trying to determine their social standing relative to others. For example, a female university student who compares her weight to other university female students is making a universalistic evaluation. A particularistic target refers to a comparison that is made with someone who holds a common bond or special significance to the comparer. Miller et al. suggested that a

particularistic target may be someone who is a part of the same social group. For instance, a university student who makes weight comparisons with her roommates is making a particularistic comparison.

Miller et al. (1988) demonstrated that people are motivated by both universalistic and particularistic evaluations. That is, people may make comparisons with others in general and with a specific reference group. However, Miller et al. found that feelings such as pride or shame resulted more from particularistic than universalistic evaluations. Further, people's self-esteem and self-concept were more defined through particularistic evaluations. Finally, they concluded that individuals more often preferred particularistic than universalistic comparisons.

Frequently Used Methods of Assessing Social Comparison

Wood (1996) outlined three general methods of assessing social comparisons and within those three methods, there are a number of procedures that are possible. The methods of assessing social comparison are; selection method, reaction method, and narration method.

Selection method. The selection method is the most frequently used method of assessing social comparisons and is designed to examine *how* people make social comparisons. The selection method identifies who people pick as targets and also identifies when social comparisons are made. Usually, these designs involve manipulating comparison conditions and then providing a variety of comparison targets from which to choose. For instance, in the rank-order paradigm, the participants complete a fake test in a small group and are told that they rank somewhere in the middle of the group in their performance. They then are allowed to choose to see the score of other targets (i.e., who score better or worse than they did) to determine to whom they compare themselves (i.e.,

superior or inferior target). Affiliation procedures occur when participants wait for some (usually stressful) event to occur and participants indicate their interest in waiting with others (either similar or dissimilar) or alone to assess reactions to social comparison. Finally, looking procedures (i.e., observing others) attempt to assess the extent to which people take the opportunity to learn social information about others (Wood, 1996).

Reaction method. Social comparison serves as the independent variable in reaction studies, as social information is provided to participants either by the researcher or in their everyday lives, and then the effects of that information are measured. Laboratory-based studies occur when participants are presented with information about others directly (e.g., this person weighs 120 pounds) or indirectly (e.g., have someone exercise with very slim individuals) and their reaction to the information are assessed. Correlational studies of comparison consequences occur when researchers correlate some aspect of the participant's own social environment (e.g., attractiveness of peers) with their outcomes (e.g., body dissatisfaction or anxiety). These types of studies may or may not involve social information that the participants have selected on their own. The last type of reaction method is comparative rating. In this type of study, participants rate themselves relative to others in a group on some characteristic of interest, or attempt to estimate the percentage of others who would respond in a similar way (Wood, 1996).

Narration method. These methods examine how participants make comparisons with others in their everyday lives by examining participants' descriptions of their own contact with social information. Global self-report methods involve asking participants directly with whom they compare themselves. These questions are able to tap into comparisons that people have already made. Self-recorded comparison diaries ask participants to record the comparisons they make in everyday life over a given time

period and describe their reactions to the comparisons. Finally, free response research occurs when researchers record the unprompted comparative statements that participants express themselves (i.e., as the comparisons are made; Wood, 1996).

SCT and Body Image

The majority of research that has applied SCT to body image has focused on body dissatisfaction, despite body image being a multi-dimensional construct (Cash, Cash, & Butters, 1983; Lew, Mann, Myers, Taylor, & Bower, 2007; Tiggemann & McGill, 2004; Trampe, Stapel, & Siero, 2007). Further, much of this research has examined social comparison and body image in laboratory settings, through manipulating social comparisons with media images (e.g., models in magazines, celebrities), and their impact on body dissatisfaction (Bessenoff, 2006; Cusumano & Thompson, 1997; Fallon & Hausenblas, 2005; Martin Ginis, Prapavessis, & Haase, 2008; Tiggemann & McGill, 2004; Tiggemann & Slater, 2004; van den Berg et al., 2007). Generally, when individuals are instructed to make social comparisons to others, there is a negative impact on body image (van den Berg et al.). For example, Tiggemann and Slater found that when women were instructed to compare themselves with attractive models in music videos, they experienced negative body image. However, relatively less work has examined the characteristics of comparisons which people make in their everyday lives, and the impact of those comparisons on body image. When examining these types of comparisons, the dimensions of comparison, frequency of comparisons, direction of comparison, and targets of comparison may all impact body image.

Dimensions of Body Image Comparisons

With respect to body image, people can make comparisons related to their physical appearance, as well as non-appearance based dimensions.

Appearance-based comparisons. When women make social comparisons, they are more likely than not to compare their appearance with others. These comparisons often revolve around weight (e.g., Carlson Jones, 2001), body size or shape (e.g., Depcik & Williams, 2004), specific body parts such as the lower body (e.g., Martin Ginis, Eng, Arbour, Hartman, & Phillips, 2005), or overall physical attractiveness (e.g., Halliwell & Dittmar, 2005). In general, these studies suggest that comparisons made based on appearance tend to have a negative influence on body satisfaction (e.g., Faith, Leone, & Allison, 1997; Heinberg, Thompson, & Stormer, 1995; Thompson, Heinberg, & Tantleff, 1991).

Non-appearance based comparisons. In addition to appearance-based comparisons, people may also make comparisons on non-appearance dimensions, such as fitness (e.g., Lew et al., 2007). For instance, Wasilenko, Kulik, and Wanic (2007) found that college women reported lower body satisfaction when exercising in the presence of a fit-looking confederate compared to a neutral or unfit looking confederate. In contrast, Carlson Jones (2001) found that non-appearance based comparisons made with peers and models/celebrities, specifically based on style and popularity were associated with greater body dissatisfaction in adolescents. Supporting the idea that non-appearance based comparisons may not have a negative impact on body image, Lew et al. found that comparisons on non-appearance dimensions (i.e., skills, fitness, and intelligence) may help to maintain body satisfaction in those who are higher in body dissatisfaction. Participants who were asked to make comparisons with models on non-appearance

dimensions (e.g., that they had better personalities, were more mentally and physically fit, and had higher morals) reported more positive body satisfaction and weight satisfaction, less appearance anxiety, and less desire to lose weight.

Directions of Comparisons

The direction of social comparisons may also impact body image. In laboratory-based studies, there is evidence that indicates that women experience more body dissatisfaction after making upward social comparisons (i.e., to a superior target) compared to when they make downward social comparisons (i.e., to an inferior target; Bessenoff, 2006; Cash et al., 1983; Halliwell & Dittmar, 2005; Krones, Stice, Batres, & Orjada, 2005). For example, Krones et al. found that when exposed to a confederate who conformed to Western society's thin ideal, college-aged women experienced greater body dissatisfaction than those exposed to a confederate of 'average' body size. Similarly, Henderson-King, Henderson-King, and Hoffmann (2001) found that when participants made negative self-evaluations (i.e., upward body image related comparisons) they evaluated themselves more negatively than participants who did not make negative self-evaluations.

When comparing to a downward (i.e., inferior) target, SCT predicts a positive outcome because people evaluate themselves as being better compared to the target. For instance, Henderson-King et al. (2001) found that when participants made positive self-evaluations (i.e., downward comparisons) they evaluated themselves more positively than those participants who did not make positive self-evaluations. In contrast, Faith et al. (1997) asked participants to imagine a downward comparison target (i.e., someone who is inferior) and to compare themselves on physical appearance. The results showed that

people experienced no effect on their state body image (Faith et al.). That is, a downward target did not make people feel better or worse about their physical appearance. This finding suggests that the direction of comparison, (i.e., upward or downward) may be less important than the process of comparison itself (i.e., the selection of targets and reaction to the social information). Most people actually avoid downward comparisons because downward targets may not affect state body image (Faith et al.; Lew et al., 2007).

Frequency of Comparisons

Other work has suggested that it is not necessarily the direction of the comparison (i.e., upward or downward), but rather the comparison itself that may impact body image. Body dissatisfaction has been found to be associated with more frequent social comparisons (Trampe et al., 2007). For example, people high in trait body dissatisfaction are almost twice as likely to engage in social comparison compared to those who are lower in trait body dissatisfaction (Bessenoff, 2006). In addition, Faith et al. (1997) found that individuals who reported a greater tendency to make comparisons with others reported higher levels of body anxiety. Similarly, Heinberg and Thompson (1992) found that whether a comparison on body image was upward or downward, no difference of the impact on body image was observed. Unfortunately, the tendency to make social comparisons may increase as we get older. Schutz, Paxton, and Wertheim (2002) found that in adolescent girls, there was a tendency to make more social comparisons for grade 10 girls, compared to grade 7 and 8 girls. These comparisons included appearance (including thinness, clothing) and non-appearance (such as fitness, general ability) dimensions. Schutz et al. concluded that the number of social comparisons made increases with age from adolescence to young adulthood.

Targets of Comparisons

According to SCT (Festinger, 1954), people should be most likely to choose a comparison target that is similar to themselves (i.e., physically and socially the same), such as friends, peers, or family. This contention is generally supported within the body image literature. For example, Franzoi and Klaiber (2007) found that when making body comparisons, people were most likely to pick targets similar to themselves. Specifically, they found college students were most likely to pick people from the general population, rather than professional athletes or models, as the comparison targets. In a study examining adolescent girls' social comparisons, girls reported making the most body-related comparisons to friends, followed by other female peers (Schutz et al., 2002). However, research has also shown that girls in particular also make comparisons with models (Cash et al., 1983; Franzoi & Klaiber; Carlson Jones, 2001; Schutz et al.), even to a greater extent than to their family (Schutz et al.).

Universalistic and particularistic targets. In looking at the influence of comparison target on body image, relatively little attention has been given to the distinction between universalistic and particularistic comparisons (i.e., people with whom we share a specific identity). Heinberg and Thompson (1992) conducted a study in which participants were assigned to either a positive or negative appearance feedback group in relation to the average population (universalistic comparison target) or fellow students (particularistic comparison target). Participants were given a sentence pertaining to their body size relative to a group. For example in the positive feedback, particularistic group, participants read a sentence such as: "Your body is smaller in comparison to other students at this school." In the universalistic condition, comparisons were made to the

average USA citizen. They found that those in the particularistic comparison group had higher levels of body image anxiety than those in the universalistic group, regardless of type of feedback. Further, subjects in the particularistic group had more body image disturbances in both positive and negative feedback groups than for subjects in the universalistic group. Heinberg and Thompson concluded that the act of comparing oneself to others may increase body dissatisfaction regardless of the information gained from the comparison or the direction of comparison, if the comparison occurs with a particularistic target.

Body Image in Exercise Settings

Exercise, whether acute or chronic, has been a proposed strategy to reduce body image disturbances among those who are dissatisfied with their bodies (Focht & Hausenblas, 2003). Liechty, Freeman, and Zabriskie (2006) found that more physical activity was related to an increase in positive body image perceptions. In their meta-analysis, Hausenblas and Fallon (2006) found that exercise was associated with improved body image across all age groups and both genders. Although physical activity has been found to improve overall body image, each dimension of body image (i.e., cognitive and affective) is affected in different ways by exercise.

Exercise and cognitive aspects of body image. Much of the research examining the relationship between exercise and body image has focused on the cognitive dimension, and specifically on body dissatisfaction. Generally, correlational research has suggested that exercisers experience less body dissatisfaction than non-exercisers (Hausenblas & Fallon, 2006). Further, experimental studies have shown that a chronic exercise program can improve appearance, health, and fitness evaluation (Henry, Anshel,

& Michael, 2006), as well as body satisfaction (Burgess, Grogan, & Burwitz, 2006; Depcik & Williams, 2004; Williams & Cash, 2001). For example, Henry et al. found that exercise programs consisting of aerobic, and strength training are the most beneficial way to improve overall body image including health, appearance, and fitness evaluation. Williams and Cash found that after a six-week weight training program, those who lifted weights had better self-reported body appearance evaluations and better body area satisfaction than controls. Those who lifted weights also reported better overall body image. Finally, Burgess et al. found that after a six week exercise intervention, body image satisfaction increased because of the toning, weight loss, and increased fitness.

Exercise and affective aspects of body image. In addition to cognitive improvements, exercise is also associated improvements in feeling states related to the body. For instance, some research suggests that regular exercisers report decreased levels of trait social physique anxiety (SPA; Berry & Howe, 2004; Lindwall & Lindgren, 2005). However, other research has suggested that those who exercise regularly have higher levels of SPA (Frederick & Morrison, 1996). Experimental studies examining the impact of exercise on SPA have found that a chronic exercise program can reduce SPA (Lindwall & Lindgren, 2005; Williams & Cash, 2001).

Social Comparison and Body Image in Exercise Settings

Social comparison and body image in exercise environments has received little attention, although Fredrick and Shaw (1995) suggested that social comparison is heightened in exercise environments. Greenleaf, McGreer, and Parham (2006) found that exercisers in aerobic fitness classes experienced an increase in negative social comparisons. Further, these negative social comparisons in exercise settings can lead to a

decrease in the enjoyment of physical activities or cessation of activity all together. However, two studies have examined the role of social comparison and body image in exercise settings. One study examined the role of the exercise leader (Martin Ginis et al., 2008) on social comparisons and body image, and the other examined the role of peers in a naturalistic setting and how body image was affected by social comparisons (Wasilenko et al., 2007).

The physical characteristics of the exercise leader in an exercise setting have been investigated by Martin Ginis et al. (2008). Specifically, the authors examined the effects of exposure to female beauty ideals as portrayed in popular exercise videos. Sedentary women viewed an exercise video of either a physique salient (i.e., in revealing clothing) or a physique non-salient (i.e., in baggy, bulky clothing) female exercise leader. Participants were asked to compare themselves with the exercise leader. Results indicated that with regards to physical attractiveness, women in both physique salient and physique non-salient conditions felt less attractive than the exercise leader, suggesting that perhaps when making body-related social comparisons, women tend to make more negative comparisons. Martin Ginis et al. concluded that women who perceived a greater negative discrepancy (i.e., made negative comparisons) between their bodies and the body of the exercise instructor reported poorer body image, suggesting that social comparison is a mechanism by which acute media exposure induces negative effects.

Wasilenko et al. (2007) investigated how women acted in the presence of other exercisers. Specifically, Wasilenko et al. examined whether a fit or unfit peer affected the exercise behaviours of others in a workout setting. Forty-five female undergraduates were recruited for the study and were simply instructed to perform their daily resistance training exercises. Participants were assigned to one of three conditions: exercising near a

fit female peer; exercising near an unfit female peer; or control (i.e., exercising with no peer in close proximity). The same female peer was used for each condition throughout the study. The perceived fitness of the peer was manipulated through her attire. The confederate wore the following in each condition: in the fit condition, shorts and a tank top were worn; in the unfit condition, pants and a baggy sweatshirt were worn; in the control condition a yoga-type pant and a zip-up sweatshirt was worn. The time participants spent exercising was affected by the peer. Participants exercised for the shortest time when the fit peer was in close proximity due to unfavourable social comparisons. Body satisfaction was also lowered in the fit peer condition. Wasilenko et al. concluded that when college-aged females exercised in the presence of a fit and slender peer, body dissatisfaction increased. It is interesting to note that there was no increase in body satisfaction or dissatisfaction for participants in the unfit and control conditions. However, in the unfit peer condition, participants actually showed off their own fitness levels by spending more time exercising on the resistance training machine.

Summary

Research investigating the role of social comparison on body image has provided some information on the types and nature of the comparisons made although the majority of this research has been conducted with adolescents and not college-aged participants (e.g., Carlson Jones, 2001; Schutz et al., 2002). In general, comparisons are made on appearance and non-appearance dimensions, and may be made to both universalistic and particularistic targets. Further, simply the act of making social comparisons may have a negative impact on body image. Finally, although exercise may improve body image, the impact of social comparisons in exercise settings may be less positive, and little evidence

exists regarding social comparison differences between non or infrequent exercisers and exercisers.

CHAPTER TWO: RATIONALE, PURPOSE, & HYPOTHESES

Rationale

Given the potentially negative impact of social comparisons on body image (Henderson-King et al., 2001; Lew et al., 2007; Lockwood & Kunda, 2000; van den Berg et al., 2007; Wasilenko et al., 2007), and the significant impact that negative body image can have on health and behaviours (e.g., negative self-esteem, depression, eating disorders; Bane & McAuley, 1998; Grogan, 2008), it was important to examine the characteristics of social comparisons that women make, which can influence their body image. Exercise does have a positive impact on body image (Hausenblas & Fallon, 2006). However, few studies have investigated the role of social comparisons in this relationship. Preliminary evidence suggests that women may make body-image-related comparisons in exercise settings (Martin Ginis et al., 2008; Wasilenko et al, 2007). However, further research is needed to examine how individuals' exercise status is related to the nature of the social comparisons that they make, and the impact of these comparisons on body image.

Statement of Purpose

The purpose of the present study was to examine the nature of social comparisons that college-aged female non or infrequent exercisers and exercisers make with respect to their bodies, and the relationship of these social comparisons to body image attitudes (evaluation, affect, investment).

Specific Objectives

1. To examine in female college-aged non or infrequent exercisers and exercisers:

a. The frequency with which body-related social comparisons were made to specific targets (i.e., same-sex friends, same-sex peers, same-sex siblings, same-sex parents, and same-sex models/celebrities).

b. The frequency with which body-related social comparisons were made on specific dimensions (i.e., body attractiveness, fitness, weight, body shape, co-ordination, strength, and muscle mass or tone).

c. The direction (positive or negative) of the body-related social comparisons made with specific targets (i.e., same-sex friends, same-sex peers, same-sex siblings, same-sex parents, and same-sex models/celebrities).

d. The direction (positive or negative) of the body-related social comparisons made on specific dimensions (i.e., body attractiveness, fitness, weight, body shape, co-ordination, strength, and muscle mass or tone).

2. To compare between female college-aged non or infrequent exercisers and exercisers:

a. The frequency of body-related social comparisons made to specific targets (i.e., same-sex friends, same-sex peers, same-sex siblings, same-sex parents, and same-sex models/celebrities).

b. The frequency with which body-related social comparisons were made for each dimension (i.e., body attractiveness, fitness, weight, body shape, co-ordination, strength, and muscle mass or tone).

c. The direction (positive or negative) of the body-related social comparisons made to specific targets (i.e., same-sex friends, same-sex peers, same-sex siblings, same-sex parents, and same-sex models/celebrities).

d. The direction (positive or negative) of the body-related social comparisons made on specific dimensions (i.e., body attractiveness, fitness, weight, body shape, co-ordination, strength, and muscle mass or tone).

3. To examine in female college-aged non or infrequent exercisers and exercisers, the relationship between body-image attitudes (SPA, body dissatisfaction, body esteem, appearance evaluation and investment, and fitness evaluation and investment) and:
    a. The frequency with which body-related social comparisons were made.
    b. The direction (positive or negative) of the body-related social comparisons made.

Hypotheses

1. It was hypothesized that:
    a. Female college-aged non or infrequent exercisers and exercisers would make comparisons with same-sex friends and same-sex peers most frequently, followed by same-sex siblings, same-sex parents, and finally, same-sex models/celebrities. Although there is conflicting evidence (e.g., Schutz et al., 2002 in adolescents), Franzoi and Klaiber (2007) found college-aged females made comparisons most often with friends, peers, and family, while the least frequent targets were professional athletes or models. Further, Carlson Jones (2001) found that the most common comparison target on appearance and non-appearance dimensions for adolescent females was peers followed by models.

b. Female college-aged non or infrequent exercisers and exercisers would make more frequent comparisons based on appearance dimensions compared to fitness dimensions. Consistent with Carlson Jones (2001), adolescent girls made more frequent appearance-related than non-appearance (e.g., social) comparisons. Also, Schutz et al. (2002) found that adolescent girls made more appearance-related comparisons than pre-adolescent girls suggesting that there may be a trend that appearance-related social comparisons increase with age.

c. Female college-aged non or infrequent exercisers and exercisers would make more negative body-related social comparisons with each target than positive ones. Festinger (1954) suggested that comparisons are generally upward, meaning people compare themselves with a superior target which assists people in trying to make themselves better (Wood, 1989). Further, Schutz et al. (2002) found that adolescent girls made more upward body-related comparisons as they age, a trend which may continue into young adulthood.

d. Female college-aged non or infrequent exercisers and exercisers would make more negative body-related social comparisons on each of the comparison dimensions than positive ones. This hypothesis was consistent with findings by Martin Ginis et al. (2008), who found that regardless of clothing salience, college-aged women made more negative appearance-related comparisons to an exercise instructor.

2. It was hypothesized that:

a. Exercisers would make more body-related social comparisons to each of the targets than non or infrequent exercisers. Since Fredrick and Shaw (1995) and Martin Ginis et al. (2008) suggested that social comparisons are heightened in exercise settings where physique is salient, it is possible that exercisers may make more body-related comparisons.

b. Exercisers would make more frequent social comparisons on each of the dimensions than non or infrequent exercisers. Fredrick and Shaw (1995) and Martin Ginis et al. (2008) suggested that social comparisons are heightened in exercise environments, especially when the physique is salient. Further, Greenleaf et al. (2006) found that exercisers in aerobic exercise settings experienced an increase social comparison compared to when they were not exercising.

c. Exercisers would make more positive social comparisons to each of the targets compared to the non or infrequent exercisers. Research has suggested that those who exercise regularly in exercise programs consisting of aerobic, and strength training, experience the most beneficial improvements to overall body image including health, appearance, and fitness evaluation (Henry et al., 2006). With an overall improvement in body image, exercisers may believe that they appear to look better than others (Hausenblas & Fallon, 2006).

d. Exercisers would make more positive comparisons on each of the body-related dimensions compared to non or infrequent exercisers. It has been found that exercise, and in particular chronic exercise, is an effective way for reducing body image disturbances among those who are dissatisfied

with their bodies (Hausenblas & Fallon, 2006; Reel et al., 2007). Given that exercisers have a more positive body image, their social comparisons may be more positive.

3. It was hypothesized that:
    a. The frequency of social comparisons would be positively related to SPA, body dissatisfaction, and appearance and fitness investment, and negatively related to body esteem and appearance and fitness evaluation. Negative body image has been associated with more frequent social comparisons (Trampe et al., 2007). For example, Carlson Jones (2001) found that adolescent girls who reported more frequent social comparisons experienced more body dissatisfaction. Also, Heinberg and Thompson (1992) found that the greatest body image disturbance occurred in those with a greater tendency to make social comparisons.
    b. More positive social comparisons would be negatively related to SPA and body dissatisfaction, and positively related to body esteem, appearance and fitness investment, and appearance and fitness evaluation. Henderson-King et al. (2001) found that when participants made positive self-evaluations, they rated themselves more positively on body esteem than those participants who did not make positive self-evaluations. Also, more positive comparisons allow people to try to make themselves better (Wood, 1989), resulting in positive body image attitudes and less negative ones. Finally, Martin Ginis et al. (2008) found that women who made negative social comparisons experienced more negative affect than those who made positive social comparisons.

CHAPTER THREE: METHODOLOGY

Participants

All participants were undergraduate and graduate students from Brock University between the ages of 17 to 29 years. Both non or infrequent exercisers and exercisers were recruited for this study to allow a thorough examination of the effects of social comparison on body image in a diverse sample and the results were generalized to many young adults. The chosen sample size was consistent with other correlational studies looking at the nature of social comparison and body image (Carlson Jones, 2001; Cash et al., 1983; Lew et al., 2007; Tiggemann & Slater; 2004; Wasilenko et al., 2007).

After removing ineligible participants (i.e., varsity athletes and participants with significant amounts of incomplete data; $n = 8$), 152 participants remained ($n = 70$ non or infrequent exercisers; $n = 82$ exercisers). Varsity athletes were removed from further analysis for several reasons. First, because of their rigorous training schedules, they would likely exercise at higher frequencies and intensities than other exercisers. Second, athletes generally have more positive body image than non-athletes (Hausenblas & Symons Downs, 2001). The remaining 152 participants had a mean age of 19.89 years ($SD = 2.33$), mean height of 65.71 inches ($SD = 8.92$), mean weight of 138.85 lbs ($SD = 25.46$), and mean Body Mass Index (BMI) of 23.05 ($SD = 4.56$). The majority of the participants were students of physical education and kinesiology ($n = 42$), psychology ($n = 26$), concurrent education ($n = 16$), and child and youth studies ($n = 11$). The mean physical activity frequency was 2.58 times per week ($SD = 1.30$). Of those who reported physical activity participation ($n = 147$), a combination of many activities ($n = 63$; e.g., cardio, weight training, and sport participation), cardiovascular activities ($n = 47$; e.g.,

running, walking, swimming), and a combination of cardio training and weight training (*n* = 33) were reported as activity types. Descriptive statistics were also calculated for non or infrequent exercisers and exercisers. See Table 1 for a summary of the entire sample's descriptive statistics and descriptive statistics by group.

Table 1

Demographic Characteristics for Non or Infrequent Exercisers (n = 70, Exercisers (n = 82) and the Entire Sample (N = 152)

	Condition		
	Non/Infreq	Exerciser	Total
Variable	Mean (SD) or Freq	Mean (SD) or Freq	Mean (SD) or Freq
Age	19.76 (2.26)	20.00 (2.39)	19.89 (2.33)
Height	64.70 (2.86)	66.56 (11.79)	65.71 (8.92)
Weight	139.56 (26.88)	138.25 (24.32)	138.85 (25.46)
BMI	23.58 (4.76)	22.59 (4.34)	23.05 (4.56)
University Major			
PEKN	11	31	42
Psychology	16	11	26
Concurrent Education	7	10	16
CHYS	7	4	11
Sociology	6	0	8
Exercise Frequency (per	1.46 (.67)	3.53 (.86)	2.58 (1.30)

week)			
0 times per week	7	0	7
1 times per week	24	0	24
2 times per week	39	0	39
3 times per week	0	52	52
4 times per week	0	19	19
5 times per week	0	8	8
6 times per week	0	2	2
7 times per week	0	1	1
Exercise Type			
None	5	0	7
Combination	23	41	63
Cardio activities	25	22	47
Cardio and weights	13	19	33

Note. For continuous variables, means (*SD*) are provided. For nominal variables, frequencies are reported. The five most frequently reported University majors are presented. Non/Infreq represents non or infrequent exercisers.

Measures

Participants completed a series of questionnaires assessing the following information: demographics; SPA; body esteem; appearance evaluation and orientation; fitness evaluation and orientation; physical activity; and social comparison. See Appendix A for the questionnaire package that participants received.

Demographic variables. Age, gender, height, weight, major, and physical activity behaviours were self-reported. For physical activity behaviour, participants were asked to indicate how many days per week they exercised on average in the past six months. Those who exercised less than two times per week were classified as non-or infrequent exercisers and those who exercised three or more times per week were classified as regular exercisers. This classification was used because it has been shown to produce groups of individuals that differ significantly on many exercise-related cognitions (e.g., self-presentational efficacy and self-efficacy; Fleming & Martin Ginis, 2004; Gammage, Hall, & Martin Ginis, 2004; Rodgers & Gauvin, 1998).

Social Physique Anxiety Scale (SPAS; Hart, Leary, & Rejeski, 1989; Martin, Rejeski, Leary, McAuley, & Bane, 1997). Participants completed the 9-item revised version of SPAS, which assessed the degree to which people become concerned when others observed or evaluated their physiques. The SPAS contains items that were measured on 5-point Likert scale ranging from *1 (not at all characteristic of me)* to *5 (extremely characteristic of me)*. A sample item from the SPAS was "It would make me uncomfortable to know others were evaluating my physique/figure." Participants who had a higher rating on the SPAS were more concerned about their physiques compared to those who scored lower. This scale has been shown to be correlated positively with concerns regarding others' evaluations about one's body (Hart et al.). This scale presented reliability in this study ($\alpha = .90$).

Eating Disorder Inventory-Body Dissatisfaction. (EDI-BD; Garner, Olmstead, & Polivy, 1983). The EDI-BD is a widely used measure of general body dissatisfaction. EDI-BD is a subscale of the 64-item Eating Disorder Inventory. This scale was a self-report, 9-item scale which assessed participants' dissatisfaction with specific body sites

such as waist, hips, thighs, and buttocks. It used a 6-point Likert scale ranging from *1 (always)* to *6 (never)*. A sample of an item from this questionnaire was "I think that my stomach is too big." High scores on the EDI-BD indicated that participants were not dissatisfied with their bodies while lower scores indicated that participants were dissatisfied with their bodies. It has demonstrated reliability (Cronbach's Alpha = .90 for anorexic patients and .91 for female controls) and has been validated in both eating-disordered and non-eating disordered groups (Garner et al.). This scale presented reliability in this study ($\alpha = .89$).

Body Esteem Scale (BES; Franzoi & Shields, 1984). The BES assessed the degree to which people felt positively or negatively about their bodies. Participants rated 35 parts and functions of the body using a 5-point Likert scale ranging from *1 (strong negative feelings)* to *5 (strong positive feelings)*. A sample of a body part rating was "chin" and a sample of body function rating was "muscular strength." Scores were combined to form three subscales: sexual attractiveness, physical condition, and weight concern. All subscale presented reliability in this study ($\alpha = .79$; $\alpha = .88$; $\alpha = .84$, respectively). Lower ratings on the BES indicated poorer body esteem and higher ratings indicated higher body esteem. Internal consistency reliability has been demonstrated for this measure ($\alpha \geq .78$) and it has been shown to be a good indicator of positive/negative feelings about one's body (Franzoi & Shields).

Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000). The MBSRQ is a 69-item self-report assessment of self-attitudinal aspect of body image. This questionnaire includes the evaluative, behavioural, and cognitive components of body image. For this study, four of the subscales were used: appearance evaluation; appearance orientation; fitness evaluation; and fitness orientation.

The appearance evaluation subscale assessed feelings of physical attractiveness or unattractiveness and satisfaction or dissatisfaction with one's looks. A sample item from this subscale was "I like my looks just the way they are." High scores indicated that participants felt mostly positive and satisfied with their appearance while low scores indicated a general unhappiness with their physical appearance. This scale presented reliability in this study ($\alpha = .87$).

The appearance orientation subscale assessed the extent of investment in one's appearance. A sample question from this subscale was "I am careful to buy clothes that will make me look my best." Individuals who indicated high scores placed more importance on how they looked, paid attention to their appearance, and engaged in extensive grooming behaviours. Low scores indicated apathy about appearance; looks were not especially important and people did not expend much effort to "looking good". This scale presented reliability in this study ($\alpha = .88$).

The fitness evaluation subscale assessed feelings of being physically fit or unfit. A sample item from this subscale was "I easily learn physical skills." High scorers regarded themselves as physically fit, "in shape", or athletically active and competent while low scorers regarded themselves as physically unfit and "out of shape." This scale presented reliability in this study ($\alpha = .81$).

The fitness orientation subscale measured the extent of investment in being physically fit or athletically competent. A sample question from this subscale was "It is important that I have superior physical strength." High scores represented greater value on fitness and more involvement in activities to enhance or maintain their fitness. Low scores represented less value on physical fitness and less regular incorporation of exercise activities into their lifestyle. This scale presented reliability in this study ($\alpha = .91$).

Participants were asked to indicate the extent to which each of the 35 statements of the four subscales personally pertained to them using a 5-point Likert scale ranging from *1 (definitely disagree)* to *5 (definitely agree)*. This questionnaire was a psychometrically sound measure for the multi-dimensions of body image, and has demonstrated acceptable internal consistency for women across the lifespan (Cronbach's alpha range from .70 to .90).

Godin Leisure-Time Exercise Questionnaire (GLTEQ; Godin & Shephard, 1985). The GLTEQ assessed physical activity behaviours that occurred during leisure (as opposed to occupational) time. It contained three open-ended questions covering the frequency of mild (e.g., easy walking), moderate (e.g., fast walking), and strenuous (e.g., jogging) exercise that was completed during free time for at least 15 minutes duration in a typical week. For these questions, weekly frequencies of strenuous, moderate, and light activities were multiplied by nine, five, and three, respectively. The total weekly leisure activity was calculated in arbitrary units by summing the products of the separate components, as shown in the following formula:

Weekly leisure activity score = (9 × Strenuous Activity) + (5 × Moderate Activity) + (3 × Light Activity).

High scores on the GLTEQ indicated more strenuous leisure-time exercise habits while low scores indicated less strenuous leisure-time exercise habits. Test-retest reliability has been found to be acceptable (r = .62) with a sample of adults in a one month period.

Social Comparison Items (SC). In order to assess the social comparison tendencies of the participants, a series of questions were developed specifically for this study based on items used by Martin Ginis et al. (2008) and Schutz et al. (2002). To measure the

frequency with which several groups were the targets of participants' social comparisons, they were asked the following question: "How frequently do you compare yourself with each of the following: a) same-sex friends; b) same-sex peers; c) same-sex siblings; d) same-sex parents; e) same-sex models/celebrities; f) other?" To assess which dimensions of the body the participants most frequently made comparisons, they were asked: "How frequently do you compare yourself with others on each of the following: a) body attractiveness; b) fitness; c) weight; d) body shape; e) co-ordination; f) strength; g) muscle mass or tone; h) other?" A 5-point Likert scale ranging from *1 (never)* to *5 (very often)* was be used to answer these two questions.

In order to measure what type of comparisons (i.e., positive or negative) were made with different targets, participants were asked the following question: "Compared to the following groups of people, how do you usually rate yourself?: a) same-sex friends; b) same-sex peers; c) same-sex siblings; d) same-sex parents; e) same-sex models/celebrities; f) other?" A 5-point Likert scale ranging from *-2 (much more negative)* to *+2 (much more positive)* was used to answer this question. To assess the direction (i.e., positive or negative) of the participants' comparisons with regards to body dimensions, they were asked: "Compared to other people, how do you rate yourself on each of the following dimensions?: a) body attractiveness; b) fitness; c) weight; d) body shape; e) co-ordination; f) strength; g) muscle mass or tone; h) other?" A 5-point Likert scale ranging from *-2 (much more negative)* to *+2 (much more positive)* was used to answer this question.

In order to assess the frequency of body comparisons with others, participants were asked: "In general, how <u>often</u> to you compare your body with other people's bodies?" A 5-point Likert scale ranging from *1 (never)* to *5 (very often)* was used to

answer this question. High scores indicated more frequent comparisons, while low scores indicated less frequent comparisons. Finally, to assess how participants rated their own bodies when making comparisons, they were asked "In general, when you compare your body to others, how do you rate your body?" A 5-point Likert scale ranging from *-2 (much more negative)* to *+2 (much more positive)* was used to answer this question. High scores indicated more positive feelings associated with the comparisons, while low scores indicated more negative feelings associated with the comparisons.

Study Design

The current study design was correlational and cross-sectional in nature. Participants provided information on comparisons that they made with others in their everyday lives using their own descriptions of their contact with social information.

Procedures

Prior to the commencement of the study, ethics clearance was obtained from the Research Ethics Board at Brock University. See Appendix B for a copy of the research ethics clearance. Participants were recruited through announcements made in undergraduate classes and posters placed around Brock University. See Appendix C for the recruitment materials. Interested individuals were asked to contact the researcher by e-mail. After being contacted, the researcher provided an overview of the study requirements and the participant's role in the study.

After agreeing to participate, a mutually convenient time was set for completion of questionnaires. All questionnaires were completed in a laboratory on campus either individually or in small groups. Questionnaires were counterbalanced in order to avoid any testing effect prior to the distribution of them to participants. Upon arrival at the

designated laboratory, participants were asked to provide informed consent. See Appendix D for the consent information. Upon giving informed consent, participants were asked to complete demographic information and the questionnaire package. The approximate time to complete the questionnaire was about 30 to 45 minutes. Upon completion of all of the questionnaires, they were returned to the investigator and participants were fully debriefed. See Appendix E for the debriefing form participants received.

CHAPTER FOUR: RESULTS

Data Screening

Treatment of missing data. Data was entered into the quantitative data analysis software program Statistical Package for the Social Sciences (SPSS) version 16.0. Data were then screened for entry errors and missing values by examining univariate frequencies. Less than 1% of the data set was missing. Two participants were deleted because their data were incomplete (i.e., the two participants missed an entire questionnaire each). For the remaining data, visual inspection of missing values revealed that there was no consistent pattern of missing variables and they were deemed random. Therefore, mean substitution from the participants' subgroup was used where a single item was missing (Tabachnick & Fidell, 2007). Next, a search for varsity athletes was completed to ensure participants included in the data analysis met the inclusion criteria. All participants who indicated that they were varsity athletes ($n = 6$) were deleted from further analyses.

Reverse coding and subscale scores. Two items on the SPAS were reversed coded such that higher scores represented higher levels of SPA. Five items in the EDI-BD were reversed coded such that lower scores represented higher levels body dissatisfaction. Finally, 13 items in the MBSRQ were reversed coded so that higher scores represented more positive levels of body evaluation or greater concern. Mean scores were calculated to serve as the subscale scores for SPAS, body dissatisfaction, appearance evaluation, appearance orientation, fitness evaluation, fitness orientation, body esteem-sexual attractiveness, body esteem-weight concerns, and body esteem-physical condition. A score on the GLTEQ was calculated using the following formula:

Weekly leisure activity score = (9 × Strenuous Activity) + (5 × Moderate Activity) + (3 × Light Activity).

Outliers. The data were screened for univariate and multivariate outliers by group. Values with a standardized score (z-score) in excess of ± 3.29 ($p < .001$, two-tailed test) were considered possible univariate outliers (Tabachnick & Fidell, 2007). An examination of the z-scores for each subscale revealed no univariate outliers.

The data were then inspected for multivariate outliers, cases with a strange combination of scores on two or more variables. This inspection was done by assessing Mahalanobis' distance. The criteria was evaluated against χ^2 with degrees of freedom equal to the number of variables of interest ($n = 9$) at $p < .001$ (Tabachnick & Fidell, 2007). Any cases with a Mahalanobis distance ≥ 27.88 were deemed multivariate outliers. Three potential multivariate outliers were detected (28.33; 29.84; 30.64). After visual inspection of the scores for the three potential outliers, they were deemed acceptable for the analysis and remained in the data set. No additional scores were considered problematic.

Normality of sampling distribution: Skewness and kurtosis. All variables were assessed for normality by examining skewness and kurtosis values by group. The obtained skewness and kurtosis values for each variable by group were tested against a null hypothesis of zero by using the significance test as outlined by Tabachnick and Fidell (2007). Skewness and kurtosis significance tests for most variables were non-significant ($p > .001$). One variable was flagged for potential skewness (fitness evaluation, $sk = 3.59$). However, visual inspection of histograms confirmed only slight skewness for the variable.

Linearity. Linearity is the assumption that two variables are related to each other in approximately a straight line relationship (Tabachnick & Fidell, 2007). This assumption was assessed by examining bivariate scatterplots by group for all possible combinations of variables. Visual inspection of the plots showed that there was no evidence of a curvilinear or any other non-linear relationship; therefore, this assumption was met.

Homogeneity of variance. Homogeneity of variance, the assumption that the variability in each dependent variable was approximately the same for all groups (Tabachnick & Fidell, 2007), was assessed using F_{max} in conjunction with sample size ratios as suggested by Tabachnick and Fidell. Given that the group sizes were relatively equal (within a ratio of 4 to 1 or less), an acceptable ratio of the largest to smallest cell variance for all variables was set at 10 or less (Tabachnick & Fidell). All variables had an F_{max} deemed acceptable (range from 1.06 to 1.89); therefore, the assumption of homogeneity of variance was met.

Multicollinearity. Pearson bivariate correlations by group were calculated to test for multicollinearity. When variables are very highly correlated, they may contain redundant information (Tabachnick & Fidell, 2007). Variables that were highly correlated ($r = .90$ or higher; $p < .01$) were considered potential multicollinear variables. Results of the analysis revealed no correlations above .90, with the strongest correlation being -.72.

Hypotheses Testing

Research question 1. Research question 1 examined the frequency of social comparisons to specific targets and on specific body dimensions, as well as the direction of comparisons with specific targets and body dimensions made by female college-aged

non or infrequent exercisers and exercisers. For each question, frequencies for each response within each question were calculated by group (i.e., non or infrequent exercisers versus exercisers). For example, participants were asked how often they compared themselves with friends, peers, siblings, parents, and celebrities. Each of these targets was rated from never to very often. Therefore, the frequency of each rating was calculated for each target (i.e., how many people answered never, rarely, sometimes, often, very often for comparisons to friends) and for each of the targets with whom they compared themselves (i.e., friends, peers, siblings, parents, models/celebrities). The same process was repeated for the frequencies of social comparisons on each dimension, and again for the direction of social comparisons with each target and for each dimension. In addition, means and standard deviations for the frequency of each target and dimension, and direction of each target and dimension were calculated.

The first question asked about the general tendency for participants to make social comparisons. The results suggested that both non or infrequent exercisers and exercisers generally made social comparisons, with participants selecting "sometimes," "often," or "very often" (96% and 90% respectively) more than "never" or "rarely" (4% and 10% respectively). See Table 2 for a summary of the general social comparison frequencies.

Table 2

Frequencies of General Frequency of Body Comparisons with Others

Exercise Status	Never	Rarely	Sometimes	Often	Very Often
Non or Infrequent Exerciser	0	3	20	31	13
Exerciser	0	8	23	29	21

Note. Data were missing for three responses for non or infrequent exercisers and one response for exercisers.

For the following paragraphs, values were provided indicating the percentage of participants who indicated making comparisons either "sometimes," "often," and "very often". For targets of comparisons, the results showed non or infrequent exercisers made the most frequent comparisons with same-sex peers (91%) and same-sex friends (90%), followed by same-sex models/celebrities (77%), same-sex siblings (39%), and same-sex parents (21%). For exercisers, the order of the targets was the same with the most frequent comparisons made with same-sex peers (91%), followed by same-sex friends (77%), same-sex models/celebrities (67%), same-sex siblings (38%), and same-sex parents (27%). See Tables 3 and 4 for complete results of the frequencies of comparisons for non or infrequent exercisers and exercisers.

Table 3

Frequencies of Body Comparisons by Target for Non and Infrequent Exercisers

Comparison Target	Never	Rarely	Sometimes	Often	Very Often
Same-Sex Friends	0	7	24	26	13
Same-Sex Peers	0	6	25	29	10
Same-Sex Siblings	32	11	13	9	5
Same-Sex Parents	26	29	13	1	1
Same-Sex Models/Celebrities	7	9	26	17	11
Other	66	1	3	0	0
"the boy you like"	0	0	1	0	0
"varsity athletes"	0	1	0	0	0
"same-sex cousins"	0	0	2	0	0

Note. Frequencies of comparisons made with "Other" were indicated by participants and indicated in quotations.

Table 4

Frequencies of Body Comparisons by Targets Made by Exercisers

Comparison Target	Never	Rarely	Sometimes	Often	Very Often
Same-Sex Friends	0	9	23	25	15
Same-Sex Peers	0	7	34	27	14
Same-Sex Siblings	29	20	12	9	10
Same-Sex Parents	37	23	12	6	4
Same-Sex Models/Celebrities	8	19	24	18	13
Other	74	1	2	1	4
"the boy you like"	0	0	0	0	1
"varsity athletes"	0	0	0	0	2
"same-sex cousins"	0	0	1	1	0
"the way I used to look"	0	0	0	0	1
"ballerinas"	0	0	1	0	0
"opposite-sex peers"	0	1	0	0	0

Note. Frequencies of comparisons made with "Other" were indicated by participants and indicated in quotations.

For the dimensions of comparison, the results indicated that non or infrequent exercisers generally made more frequent comparisons on appearance-related body dimensions (i.e., body attractiveness, weight, body shape, and muscle mass or tone) than fitness-related body dimensions (i.e., fitness, co-ordination, and strength). The only

exception was that they reported making comparisons "sometimes," often," or "very often" on the fitness item compared to the muscle mass or tone item. Further, when non or infrequent exercisers indicated "other" body dimensions on which they compared themselves to others, they were all appearance-based comparisons (i.e., height, facial feature, proportions, etc.). See Table 5 for the complete frequencies for body dimension comparison for non or infrequent exercisers.

For exercisers, results were similar to those of non or infrequent exercisers. Exercisers generally made more frequent comparisons on appearance-related body dimensions than fitness-related body dimensions. Exercisers also made more comparisons on the fitness item compared to the muscle mass or tone item like the non or infrequent exercisers. However, when exercisers indicated "other" body dimensions on which they compared themselves to others, there was an even split on both appearance-based and fitness-based comparisons. See Table 6 for the complete frequencies for body dimension comparisons for exercisers.

Table 5

Frequencies of Body Dimension Comparisons Made by Non or Infrequent Exercisers

Body Dimension	Never	Rarely	Sometimes	Often	Very Often
Body Attractiveness	1	6	21	28	14
Fitness	2	10	33	19	6
Weight	4	11	22	21	12
Body Shape	0	9	22	22	16
Co-ordination	18	25	16	10	1
Strength	13	27	23	5	2
Muscle Mass or Tone	11	18	29	10	2
Other	65	1	2	2	0
"height"	0	1	0	0	0
"what others wear"	0	0	0	1	0
"facial features"	0	0	0	2	0
"proportions"	0	0	1	0	0

Note. Frequencies of body dimension comparisons made with "Other" were indicated by participants and indicated in quotations.

Table 6

Frequencies of Body Dimension Comparisons Made by Exercisers

Body Dimension	Never	Rarely	Sometimes	Often	Very Often
Body Attractiveness	0	10	27	31	14
Fitness	0	10	36	24	13
Weight	4	9	27	24	18
Body Shape	2	12	24	23	21
Co-ordination	17	37	20	5	3
Strength	4	41	26	8	3
Muscle Mass or Tone	0	29	31	17	5
Other	78	0	1	1	2
"what others wear"	0	0	0	0	1
"natural looks"	0	0	0	1	0
"sporting ability"	0	0	0	0	1

Note. Frequencies of body dimension comparisons made with "Other" were indicated by participants and indicated in quotations.

Frequencies for the direction (i.e., positive or negative) with which non or infrequent exercisers and exercisers generally made social comparisons were assessed. The results suggested that both non or infrequent exercisers and exercisers generally made more negative social comparisons (i.e., "somewhat negative" and "much more negative;" 52% and 46% respectively) than positive comparisons (i.e., "somewhat more

positive" and "much more positive;" 22% and 34% respectively). See Table 7 for a summary of the direction of their social comparison frequencies.

Table 7

Frequency of Direction of General Body Comparisons with Others

Exercise Status	More Neg	Somewhat Neg	Neither Pos/ Neg	Somewhat Pos	More Pos
Non or Infrequent Exerciser	6	29	17	13	2
Exerciser	6	31	16	26	1

Note. Data was missing for three responses for non or infrequent exercisers and two responses for exercisers. More Neg = Much More Negative, Somewhat Neg = Somewhat More Negative, Neither Pos/Neg = Neither Positive nor Negative, Somewhat Pos = Somewhat More Positive, and More Pos = Much More Positive.

It was hypothesized that both groups would make more negative body-related social comparisons with each target than positive ones. The results suggested that non or infrequent exercisers made more negative comparisons (i.e., "somewhat worse" and "much worse") with same-sex friends (46%), same-sex peers (44%), and same-sex models/celebrities (87%) and more positive comparisons (i.e., "somewhat better" and "much better) with same-sex siblings (20%) and same-sex parents (44%). See Table 8 for complete results of the frequencies of direction of body comparison with other for non or infrequent exercisers.

Table 8

Frequencies of Direction of Body Comparisons by Targets Made by Non or Infrequent Exercisers

Comparison Target	Much Worse	Somewhat Worse	Neither Bet/Wor	Somewhat Better	Much Better
Same-Sex Friends	6	26	24	13	1
Same-Sex Peers	6	25	26	13	0
Same-Sex Siblings	4	7	44	9	5
Same-Sex Parents	2	4	32	22	8
Same-Sex Models/Celebrities	33	28	7	1	1
Other	0	1	0	0	0
"the boy you like"	0	1	0	0	0

Note. One case was missing from same-sex siblings and two were missing from same-sex parents. The direction of body comparisons made with "Other" were indicated by participants and indicated in quotations. Neither Bet/Wor = Neither Better Nor Worse.

Similar to non or infrequent exercisers, exercisers made more negative comparisons (i.e., "somewhat worse" and "much worse") with same-sex friends (38%), same-sex peers (35%), and same-sex models/celebrities (77%) and more positive comparisons (i.e., "somewhat better" and "much better) with same-sex siblings (34%) and same-sex parents (46%). Further, when participants indicated other people they made comparisons with (i.e., ballerinas, athlete, and same-sex cousins), they made more

negative comparisons (60%). See Table 9 for completed data regarding the frequency of direction of body comparisons with others for exercisers.

Table 9

Frequencies of Direction of Body Comparisons by Target Made by Exercisers

Comparison Target	Much Worse	Somewhat Worse	Neither Bet/Wor	Somewhat Better	Much Better
Same-Sex Friends	1	30	27	21	3
Same-Sex Peers	5	24	25	25	3
Same-Sex Siblings	3	8	42	23	4
Same-Sex Parents	0	6	38	27	10
Same-Sex Models/Celebrities	29	34	13	6	0
Other	1	2	1	1	0
"the boy you like"	0	0	0	1	0
"ballerinas"	1	0	0	0	0
"athletes"	0	1	0	0	0
"same-sex pro athletes"	0	0	1	0	0
"same-sex cousins"	0	1	0	0	0

Note. Two cases were missing from same-sex siblings and one was missing from same-sex parents. The direction of body comparisons made with "Other" were indicated by participants and indicated in quotations. Neither Bet/Wor = Neither Better Nor Worse.

Finally, with respect to the direction of comparisons on each of the body-related dimensions, it was found that non or infrequent exercisers frequently made more negative body-related comparisons (i.e., "somewhat negative" and "much more negative") on all dimensions except for co-ordination (35%). When non or infrequent exercisers indicated "other" body-related dimensions in which they compared themselves to others (i.e., exercise status, facial features, etc.), they made more negative comparisons (75%) than positive ones (i.e., "somewhat positive" and "more positively" 25%). See Table 10 for complete frequencies comparison on body dimensions for non or infrequent exercisers.

Exercisers made more negative comparisons (i.e., "somewhat negative" and "much more negative") on weight (44%) and body shape (48%) but more positive comparisons (i.e., "somewhat positive" and "more positively") on body attractiveness (30%), fitness (46%), co-ordination (49%), strength (51%), and muscle mass or tone (41%). When exercisers indicated other body dimensions (i.e., clothes/fashion), they made more negative comparisons (100%). For complete results of the frequencies of comparisons on body dimensions for exercisers, see Table 11.

Table 10

Frequencies of Body Dimension Comparisons Made by Non or Infrequent Exercisers

Body Dimension	More Neg	Somewhat Neg	Neither Pos/ Neg	Somewhat Pos	More Positively
Body Attractiveness	8	20	31	10	1
Fitness	7	39	13	9	2
Weight	9	21	25	15	0
Body Shape	8	25	19	17	1
Co-ordination	5	13	34	15	13
Strength	6	28	17	16	3
Muscle Mass or Tone	11	36	12	10	1
Other	0	3	0	0	1
"exercise status"	0	1	0	0	0
"facial features"	0	1	0	0	0
"positive attitude"	0	0	0	0	1
"proportions"	0	1	0	0	0

Note. The direction of body comparisons made with "Other" were indicated by participants and indicated in quotations. More Neg = Much More Negatively, Somewhat Neg = Somewhat More Negatively, Neither Pos/Neg = Neither Positively nor Negatively, Somewhat Pos = Somewhat More Positively, and More Pos = Much More Positively.

Table 11

Frequencies of Body Dimension Comparisons Made by Exercisers

Body Dimension	More Neg	Somewhat Neg	Neither Pos/Neg	Somewhat Pos	More Pos
Body Attractiveness	1	23	33	24	1
Fitness	5	17	16	29	9
Weight	7	29	24	18	4
Body Shape	5	34	22	18	3
Co-ordination	7	7	28	29	11
Strength	2	18	20	34	8
Muscle Mass or Tone	3	30	15	30	4
Other	0	1	0	0	0
"clothes/fashion"	0	1	0	0	0

Note. The direction of body comparisons made with "Other" were indicated by participants and indicated in quotations. More Neg = Much More Negatively, Somewhat Neg = Somewhat More Negatively, Neither Pos/Neg = Neither Positively nor Negatively, Somewhat Pos = Somewhat More Positively, and More Pos = Much More Positively.

Means and standard deviations were calculated for the frequency of comparison for each target and dimension, and the direction of comparison for each target and dimension for the entire sample. Generally, the sample made social comparisons relatively often ($M = 3.79$; $SD = .88$) and these comparisons were more negative ($M = -.27$; $SD = 1.01$). Next, the means and standard deviations for frequency and direction of

comparisons with specific groups were examined. The group most frequently compared themselves with same-sex peers and least frequently with same-sex parents. Also, the sample made the most negative comparisons with same-sex models/celebrities and the most positive comparisons with same-sex parents. Means and standard deviations were also calculated by group. See Table 12 for the complete summary of means and standard deviations for the frequency and direction of comparisons with others for the entire sample and each exercise group.

Means and standard deviations were also calculated for the frequency and direction of comparisons on specific body dimensions. The group most frequently compared themselves on body attractiveness and least frequently compared themselves on co-ordination. The sample compared themselves negatively on almost all of the body dimensions. The most negative comparisons occurred with muscle mass or tone and the most positive comparisons occurred with co-ordination. Means and standard deviations were also calculated by group. See Table 13 for the complete results of means and standard deviations for the frequency and direction of comparisons on body dimensions for the sample and each exercise group.

Table 12

Means and Standard Deviations for Frequency and Direction of Social Comparison for Specific Groups for the Entire Sample and By Group

	Non/Infreq (n = 70)		Exercisers (n = 82)		Group Total (n = 152)	
Target	Freq	Direct	Freq	Direct	Freq	Direct
Friends	3.64 (.90)	-.33 (.93)	3.66 (.91)	-.06 (.91)	3.65 (.90)	-.18 (.92)
Peers	3.61 (.84)	-.34 (.88)	3.59 (.87)	-.04 (1.00)	3.73 (1.79)	-.78 (.96)
Siblings	2.20 (1.34)	.06 (.87)	2.39 (1.40)	.21 (.84)	2.30 (1.37)	.14 (.85)
Parents	1.89 (.86)	.44 (.89)	1.99 (1.16)	.51 (.81)	1.94 (1.03)	.48 (.84)
Mod/Cel	3.22 (1.17)	-1.30 (.82)	3.11 (1.22)	-1.05 (.90)	3.16 (1.19)	-1.16 (.87)
Other	1.10 (.42)	-1.00 (0)	1.29 (.96)	-.60 (1.14)	1.20 (.77)	-.67 (1.03)

Note. Standard deviations are in parentheses. Freq = Frequency, Direct = Direction, Non/Infreq = Non or Infrequent Exercisers, and Mod/Cel = Models & Celebrities. All comparison targets were same-sex. Scale for Frequency ranged from 1-5. Scale ranged for Direction from -2 to +2.

Table 13

Means and Standard Deviations for Frequency and Direction of Social Comparison on Specific Body Dimensions for the Entire Sample and By Group

	Non/Infreq (n = 70)		Exercisers (n = 82)		Group Total (n = 152)	
Dimensions	Freq	Direct	Freq	Direct	Freq	Direct
Body Attractiveness	3.67 (.94)	-.34 (.92)	3.60 (.91)	.01 (.82)	3.64 (.92)	-.15 (.88)
Fitness	3.24 (.91)	-.57 (.94)	3.46 (.89)	.02 (1.15)	3.36 (.90)	-.25 (1.10)
Weight	3.37 (1.12)	-.34 (.96)	3.52 (1.10)	-.21 (1.04)	3.45 (1.11)	-.27 (1.00)
Body Shape	3.65 (.98)	-.31 (1.02)	3.60 (1.10)	-.24 (.99)	3.62 (1.04)	-.28 (.98)
Coordination	2.3 (1.05)	-.03 (.93)	2.27 (.98)	.37 (1.09)	2.28 (1.01)	.18 (1.04)
Strength	2.37 (.97)	-.26 (1.05)	2.57 (.89)	.34 (1.01)	2.48 (.92)	.07 (1.07)
Muscle Mass/Tone	2.63 (1.01)	-.66 (.96)	2.98 (.90)	.02 (1.04)	2.82 (.97)	-.29 (1.06)
Other	1.16 (.61)	-.25 (1.50)	1.16 (.73)	-1.00 (0)	1.16 (.67)	-.40 (1.34)

Note. Standard deviations are in parentheses. Freq = Frequency, Direct = Direction, and Non/Infreq = Non or Infrequent Exercisers. All comparison targets were same-sex. Scale for Frequency ranged from 1-5. Scale ranged for Direction from -2 to +2.

Research question 2. Research question 2 compared the difference between female college-aged non or infrequent exercisers and exercisers on the frequency and

direction of social comparisons made to specific targets and the frequency and direction of social comparisons made on specific body dimensions. To assess the differences in comparison tendencies between non or infrequent exercisers and exercisers, a series of repeated measures MANOVAs were conducted. The independent variable for all MANOVAs was exercise status (i.e., non or infrequent exerciser or exerciser). An initial MANOVA examined if the frequency of participants' general social comparisons tendencies and the direction in which participants made general social comparisons were dependent on exercise status. The results showed no significant differences ($F(2, 144) = .533, p > .05; \eta^2 = .007$) based on exercise status. Thus, the general frequency and direction of social comparisons with others was not dependent on exercise status.

The second MANOVA investigated the frequency of occurrence of each response of each of the comparison targets (i.e., same-sex friends, same-sex peers, same-sex siblings, same-sex parents, and same-sex models/celebrities). The dependent variables were the mean frequency of response for each target. The results from the second MANOVA revealed no significant differences ($F(5, 144) = .351, p > .05; \eta^2 = .012$) based on exercise status. Thus, frequency of comparisons with specific targets did not differ between non or infrequent exercisers and exercisers.

The third MANOVA investigated the frequency of occurrence for each response of each of the comparison dimensions (i.e., body attractiveness, fitness, weight, body shape, co-ordination, strength, and muscle mass or tone). The dependent variables were the mean frequency of response for each of the body-related dimensions. The results from the third MANOVA investigating the frequency of occurrence of each response of each of the specific comparison dimensions also revealed no significant differences ($F(7, 143) = 1.45, p > .05; \eta^2 = .066$) based on exercise status. Therefore, the frequency of

comparisons with specific body dimensions did not differ between the two exercise groups.

The fourth MANOVA examined the direction (i.e., positive or negative) of the social comparisons for each target. The direction of comparisons to each target served as the dependent variables. The results from the fourth MANOVA examining the direction of social comparisons for each of the specific targets revealed no significant differences ($F(5, 140) = .968, p > .05; \eta^2 = .033$) based on exercise status. The results suggested that the direction of comparisons, either positive or negative, did not depend on exercise status.

Finally, the fifth MANOVA examined the direction of comparisons in relation to the specific body-related dimensions. The direction of comparison of body-related dimensions served as the dependent variable. The results from the fifth MANOVA examining the direction of comparison in relation to specific body dimensions revealed a significant ($F(7, 144) = 3.26, p < .05; \eta^2 = .132$) difference based on exercise status. Follow-up univariate ANOVAs showed significant differences on five variables: physical attractiveness ($F(1, 150) = 6.33, p < .05; \eta^2 = .041$); fitness ($F(1, 150) = 11.89, p < .05; \eta^2 = .073$); co-ordination ($F(1, 150) = 5.61, p < .05; \eta^2 = .036$); strength ($F(1, 150) = 12.83, p < .05; \eta^2 = .079$); muscle mass or tone ($F(1, 150) = 17.34, p < .05; \eta^2 = 1.04$). Examination of means showed that exercisers made more positive comparisons on all the body dimensions than non or infrequent exercisers. See Table 13 for the means of social comparisons on body dimensions by exercise group.

Research question 3. Research question 3 examined the relationship between body-image attitudes and the frequency of body-related social comparisons and the direction of the body-related social comparisons by exercise group. Correlational analyses

were used to assess the relationship between the two general social comparison items (i.e., "In general, how <u>often</u> do you compare your body with other people's bodies?" and "In general, when you compare your body to others, what kind of comparisons do you usually make?") and several trait body image measures. The mean frequency and the direction scores for the social comparison items and the body image measures by group (i.e., non or infrequent exercisers and exercisers) were used to examine the relationship.

As expected, bivariate correlations showed most scales correlated with one another. See Table 14 for all correlations. Correlations for the general direction of comparisons for non or infrequent exercisers ranged from $r = -.73$ to $r = .75$. In general, all correlations were in the expected direction. For example, body image measures in which a high score represents positive body image (e.g., body dissatisfaction) were positively correlated with one another, but negatively correlated with measures in which a high score represented a negative body image (e.g., SPA). The direction of social comparisons showed a non-significant relationship with appearance orientation, fitness evaluation, and fitness orientation. Most of the correlations were positive in nature except between the general frequency of comparisons and SPAS. That is, for non or infrequent exercisers, comparisons became more negative with an increase in the frequency of comparisons and with an increase in SPA. Correlations for the general direction of comparison for exercisers ranged from $r = -.63$ to $r = .74$. Non-significant correlations were found for body esteem-sexual attractiveness and appearance orientation. Similar to non or infrequent exercisers, most correlations were positive in nature except for with frequency of comparisons and SPAS; therefore, comparisons became more negative with an increase in the frequency of comparisons and with an increase in SPA for exercisers. See Table 14 for all correlations.

Correlations for the general frequency of social comparison for non or infrequent exercisers ranged from $r = -.50$ to $r = .59$. Frequency of comparisons was significantly related to all trait body image measures except with body esteem-sexual attractiveness, fitness evaluation, and fitness orientation. Most of the correlations for frequency of social comparisons with the trait measures of body image revealed a negative relationship. However, frequency of comparison was positively correlated with SPAS ($r = .59$) and appearance orientation ($r = .34$); therefore, the more frequent comparisons, the higher one's SPA and the greater importance placed on appearance.

For exercisers, correlations for the general frequency of comparisons of exercisers ranged from $r = -.45$ to $r = .61$. Non-significant correlations were found for body esteem - sexual attractiveness, body esteem-physical condition, fitness evaluation, and fitness orientation. Most correlations for the general frequency of comparisons for exercisers were negative with the exception SPAS ($r = .61$) and appearance orientation ($r = .54$). That is, the more frequently comparisons were made, the higher the SPA and greater importance was placed on appearance.

Table 14

Bivariate Correlations between Body-Image Attitudes and Frequency and Direction of Social Comparisons by Exercise Group

	1	2	3	4	5	6	7	8	9	10	11
1. Freq	—	-.33**	.61**	-.45**	-.10	-.39**	-.08	-.23*	.54**	.04	.05
2. Direct	-.41**	—	-.63**	.74**	.18	.72**	.44**	.63**	.01	.28*	.40**
3. SPA	.59**	-.73**	—	-.74**	-.29**	-.74**	-.31**	-.66**	.31**	-.15	-.15
4. BD	-.51**	.68**	-.66**	—	.22*	.82**	.32**	.72**	-.17	.17	.24*
5. SA	-.24	.32**	-.36**	.30*	—	.38**	.25*	.40**	.01	.07	.04
6. WC	-.50**	.75**	-.68**	.86**	.38**	—	.48**	.73**	-.10	.20	.23*
7. PC	-.28*	.34**	-.45**	.41**	.43**	.54**	—	.41**	.00	.71**	.72**
8. AE	-.50**	.71**	-.82**	.70**	.51**	.75**	.45**	—	.11	.24*	.28**
9. AO	.34**	.01	.29*	-.19	-.08	-.14	-.07	-.05	—	.08	.05
10. FE	-.19	.04	-.23	.06	.31**	.16	.67**	.21	.07	—	.78**
11. FO	-.18	.19	-.14	.11	.17	.22	.65**	.18	.25*	.64**	—

Note. Exercisers above diagonal; non or infrequent exercisers below diagonal. Freq = frequency of comparison; Direct = direction of comparison; SPA = social physique anxiety; BD = body dissatisfaction, SA = sexual attractiveness; WC = weight

concerns; PC = physical condition; AE = appearance evaluation; AO = appearance orientation; FE = fitness evaluation; FO = fitness orientation. *$p < .05$; **$p < .001$.

The body image measures were used to predict both direction of social comparisons and frequency of comparisons. To make these predictions, two separate regression analyses were run for each group (non or infrequent exercisers and exercisers) for each of the general social comparison questions (i.e., "In general, how often do you compare your body with other people's bodies?" and "In general, when you compare your body to others, what kind of comparisons do you usually make?"). The independent variables for all the regressions were the body image attitude measures (i.e., SPA, body dissatisfaction, body esteem, appearance evaluation and investment, and fitness evaluation and investment) while the dependent variables were the frequency and direction of the comparisons. The first two regressions predicted the frequency and direction of social comparisons from trait body image measures for non or infrequent exercisers. The second two regressions predicted the frequency and direction of social comparisons from trait body image measure for exercisers.

The results from the regression analysis for non or infrequent exercisers predicting frequency of social comparison showed that the overall model accounted for a significant amount of variance in the frequency of social comparisons ($F(9, 57) = 5.62, p < .001$, $R^2_{adj} = .387$). Specifically, for non or infrequent exercisers, appearance orientation was a significant predictor of the frequency of social comparison ($B = .429$, $SE_B = .154$, $\beta = .312$, $p < .01$). The more importance non or infrequent exercisers placed on their appearance, the more frequent the social comparisons they made. The results from the regression analysis for non or infrequent exercisers showed that trait body image measures also accounted for significant variance in the direction of social comparisons ($F(9, 57) = 13.43, p < .001, R^2_{adj} = .68$). Specifically, SPAS ($B = -.583$, $SE_B = .186$, $\beta = -$

.446, $p < .01$) and body esteem-weight concerns ($B = .522$, $SE_B = .207$, $\beta = .432$, $p < .01$) were significant predictors of the direction of social comparisons. For non or infrequent exercisers, more negative social comparisons were associated with higher levels of anxiety and greater importance on weight concerns.

The results for the regression analysis for exercisers revealed that specific trait measures of body image significantly predicted the frequency of social comparisons ($F(9, 71) = 8.67$, $p < .001$, $R^2_{adj} = .463$). It was found that for exercisers, SPAS ($B = .508$, $SE_B = .147$, $\beta = .497$, $p < .01$) and appearance orientation ($B = .457$, $SE_B = .134$, $\beta = .335$, $p < .01$) were significant predictors of the frequency of social comparisons. Higher SPA and greater importance on appearance were associated with more frequent social comparisons in exercisers. Finally, the results for the regression of body images measures on the direction of social comparisons were also significant ($F(9, 70) = 14.65$, $p < .001$, $R^2_{adj} = .609$). For exercisers, body dissatisfaction ($B = .368$, $SE_B = .143$, $\beta = .362$, $p < .05$), appearance orientation ($B = .256$, $SE_B = .123$, $\beta = .175$, $p < .05$), and fitness orientation ($B = .423$, $SE_B = .194$, $\beta = .266$, $p < .05$) were significant predictors of the direction of social comparison. Higher body satisfaction and less importance placed on appearance and fitness were associated with more positive social comparison in exercisers.

CHAPTER FIVE: DISCUSSION

The present study examined the nature of social comparisons that college-aged female non or infrequent exercisers and exercisers made with respect to their bodies, and the relationship of these social comparisons to body image attitudes (evaluation, affect, investment). It was hypothesized that: (1) participants would make social comparisons most often with similar others (e.g., friends and peers), and more often on appearance-related aspects compared to fitness-related aspects, and that these comparisons would be negative; (2) exercisers would make more frequent comparisons to all targets and more frequent comparisons on all body dimensions and that the comparisons would be more positive than non or infrequent exercisers; and (3) more frequent comparisons would be positively related to SPA and body dissatisfaction, appearance and fitness investment, and negatively related to body esteem and appearance and fitness evaluation while more positive social comparisons would be negatively related to SPA and body dissatisfaction, and positively related to body esteem, appearance and fitness investment, and appearance and fitness evaluation. These hypotheses were partially supported.

Research Question 1

In the current study, both groups made the most comparisons on body attractiveness, with body shape and weight following close behind. The fewest comparisons were with co-ordination. Similarly, Carlson Jones (2002) found that adolescent females made most comparisons on body shape/build and facial comparisons and Strahan, Wilson, Cressman, and Buote (2006) suggested that women tend to make more appearance-based comparisons because appearance is always salient for women.

Perhaps as a result of the salience of appearance, both groups in the current study tended to use appearance as the basis for their social comparisons.

The present study found that both groups most frequently made comparisons with peers, friends, and model/celebrities and least frequently with siblings and parents. This finding is consistent with existing research in adolescent populations (Carlson Jones, 2001; Schutz et al., 2002), which has shown adolescent girls compared themselves most often with peers and fashion models followed by family members. This finding partially supports Festinger's (1954) hypothesis regarding the targets of social comparisons. Festinger hypothesized that people will choose to make comparisons with people who are similar to themselves in order to gain the most information about the self. Consistent with this theory, the findings of the current research found that participants made comparisons most frequently with friends and peers, the group with whom the participants were most similar on factors such as age and lifestyle. These groups would likely provide the most information (e.g., attractiveness, weight, body size, etc.) about specific characteristic such as the body, which would allow people to assess their social status.

However, in direct contrast to Festinger's (1954) original hypothesis, participants in the current study made more frequent comparisons with models and celebrities compared to siblings and parents. This finding is similar to Franzoi and Klaiber (2007), who found that college-aged students were most likely to pick comparison targets from their own reference group (i.e., same age-group and same-sex), within the general population. However, when it came to comparisons on body dimensions, they also chose models as a comparison target. One reason that college-aged women may choose models and celebrities as comparison targets is that there is a great deal of focus in the media on models and celebrities, often with respect to appearance (e.g., weight, clothing, etc.).

Many of the images of models and celebrities implicitly and explicitly encourage comparisons. For example, magazine racks are continuously filled with magazines that assess celebrity's weight (i.e., how much they lost or how much they gained). Since these media images are so pervasive and salient in society (Tiggemann & McGill, 2004), people may be inclined to make comparisons with this group.

Further, it could be that comparisons to models and celebrities represent an attempt at self-improvement (Wood, 1989). Models and celebrities represent the ideal female body size and shape, which many young women aspire to achieve. It is possible that college-aged females make comparisons with models and celebrities in order to reduce the differences between themselves and the superior target (i.e., improve themselves; Wood, 1989). Since it may be important for young female adults to reach the ideal body type, making comparisons with models and celebrities may give them a goal for which to strive.

Both groups made the fewest comparisons with siblings followed by parents, which is consistent with Schutz et al. (2002) who found that adolescents made comparisons with family members less often than they did with friends. Fewer comparisons with family members may have been seen in the current sample because, with respect to body image, family members may become relatively less important to young adults (Carlson Jones, 2001), perhaps because social comparisons are used to assess social status (Festinger, 1954). If so, peers are likely a better indicator of social status.

Also supported by previous research (Carlson Jones, 2001; Franzoi & Klaiber, 2007; Schutz et al., 2002), participants made appearance-based comparisons (i.e., body attractiveness, weight, and body shape) more frequently than fitness-based comparisons

(i.e., strength, co-ordination, and fitness). Depcik and Williams (2004) and Halliwell and Dittmar (2005) found that when women make social comparisons regarding the body, they frequently make appearance-based comparisons. Further, Franzoi and Klaiber confirmed that college-aged women do make more comparisons on appearance, especially on weight. Schutz et al. went on to speculate that since adolescent girls made more appearance-related comparisons than pre-adolescent girls, there may be a trend of increased appearance-related comparisons with age. Women may make more appearance-based comparisons because cultural norms for appearance are salient in women's everyday lives (Strahan et al., 2006).

According to Festinger (1954), people's drive for comparisons is stronger on domains that are of particular importance to them. Perhaps these types of comparisons are important to women because people generally judge others on appearance and people are treated more positively when their appearance is considered attractive (Thompson et al., 1999). Women are constantly exposed to images and ideals focusing on appearance, such as advertisements for products on televisions, articles on how to lose weight in magazines, and television shows devoted to what people are wearing at Red Carpet events. All of these messages emphasize the importance of appearance and the ideal body, particularly being thin, emphasizing the relevance of the body.

Hypotheses were partially supported for the direction of comparisons with specific targets. Both groups made more negative comparisons with friends, peers, and models/celebrities, and more positive comparisons with siblings and parents. In an adolescent population, Schutz et al. (2002) found that girls made more negative social comparisons than positive ones, and these negative comparisons occur with both media images (i.e., models and celebrities) and peers in their daily lives (Carlson Jones, 2001).

In a college-aged sample, Lew et al. (2007) suggested one reason that social comparisons tend to be negative is that positive social comparisons do not lead to strong enough affective outcomes and are therefore avoided. For example, when people make negative social comparisons, the negative feelings that they experience are much stronger than the positive feeling they would experience from making positive social comparisons.

By contrast, the comparisons made by participants with family were more positive. Perhaps participants made more positive comparisons with family members due to the nature and extent of interactions. Family members observe each other both at their very best and their very worst. It is possible that through the additional information, both good and bad, coming from family members, participants simply viewed themselves more positively than their family. By contrast, when seeing friends and peers, and certainly models/celebrities, most people would see them at their best in terms of physical appearance. In addition, with respect to parents, perhaps participants felt that because they were younger, they were closer to the ideal than their parents, and therefore, seen themselves more positively.

However, there is conflicting evidence as to why participants made more positive comparisons than negative comparisons with siblings. Coomber and King (2008) found that sisters compared physical appearance with siblings just as much as peers and experienced the same outcomes (i.e., negative outcomes). However, Schutz et al. (2002) found siblings were not an important comparison target for adolescents, resulting in more positive social comparisons. The conflicting evidence suggests that sisters may or may not be important contributors to the development of body dissatisfaction as a result of the social comparison process and more research is needed to evaluate the importance of siblings in the social comparison process.

The final hypothesis for research question one was partially supported. As hypothesized, non or infrequent exercisers made more negative comparisons on all body dimensions than positive comparisons, with the exception of the co-ordination item. This finding is consistent with the normative discontent that is common in North American countries. Normative discontent refers to the widespread dissatisfaction experienced by women regarding the appearance of their bodies (Rodin, Silberstein, & Striegel-Moore, 1984). In fact, this negative body image is so common, it is seen as "normal" to be dissatisfied, rather than satisfied with one's body. The primarily negative social comparisons may be a reflection of the normality of thinking negatively about one's body.

By contrast, exercisers made more positive comparisons on all body dimensions except for weight and body shape. For comparisons on the non-appearance dimensions (i.e., fitness, co-ordination, and strength), exercisers may already feel satisfied with their bodies because they know that they are healthy and fit, especially compared to others (Lew et al., 2007; Wasilenko et al., 2007). However, with respect to body shape and weight, exercisers made negative comparisons, just as non or infrequent exercisers did. This may in part be due to the fact that the cultural body ideal for women is a very thin physique, with shape and weight being the most important aspect of the physique (Martin Ginis et al., 2005). Further, many women always feel negatively about their weight and body shape (Bane & McAuley, 1998; Martin Ginis et al. 2005). Exercisers may have felt that although they may compare favourably to others on many dimensions, they may never feel that they compare as favourably on weight and shape, which has a very narrow ideal in North American countries. Finally, it is interesting to note that this finding shows how weight and body shape are critical, negative body image issues for college-aged

women, even for those who engage in regular exercise and rate themselves positively on all other dimensions of body image.

Research Question 2

Research question 2 compared the differences between college-aged female non or infrequent exercisers and exercisers on the frequency and direction of social comparisons made to specific targets and the frequency and direction of social comparisons made on specific body dimensions using a series of MANOVAs. In general, there were few differences between these two groups on either frequency or direction of social comparisons. The only exception was that exercisers generally made more positive social comparisons on body-related dimensions than non or infrequent exercisers.

The lack of differences on the frequency of social comparisons with each target or for specific body dimension and direction of social comparison with targets reflects that most people have an innate drive to evaluate their opinions and abilities, to determine if they are adequate (Festinger, 1954), regardless of exercise status. Exercise is only one aspect of a person's life and it may not be a significant enough part to result in drastic changes in social comparison tendencies between non or infrequent exercisers and exercisers. Further, many differences may not have been observed because in the non or infrequent exercisers group, many of the participants were in fact infrequent exercisers (i.e., exercising between one and two times per week). There were only seven participants who identified themselves as never exercising. Perhaps if the groups were more extreme (e.g., non exercisers versus those who exercise 5 or more times per week), more differences may have been observed.

The current study did find that there were several differences in the direction of social comparisons on body dimensions between non or infrequent exercisers and exercisers. Specifically, differences existed on five of the seven body dimension variables: physical attractiveness; fitness; co-ordination; strength; muscle mass or tone, with no difference for weight and body shape. Further, it was found that exercisers made more positive comparisons on all of these body dimensions than non or infrequent exercisers. This finding is consistent with research that has found that exercise improves body image and is an effective way to reduce body image disturbances (Hausenblas & Fallon, 2006; Reel et al., 2007). It is possible that exercise may lead to a more positive body image through more positive social comparisons. Given that exercisers engage in frequent exercise, and their bodies tend to approach society's ideals, they may believe that they will compare favourably to others. However, this benefit is not seen with body shape and weight, supporting the idea that exercisers (even compared to others) are critical of this important aspect of their own bodies.

Research Question 3

Research question 3 examined the relationship between body-image attitudes (SPA, body dissatisfaction, body esteem, appearance evaluation and investment, and fitness evaluation and investment) and the frequency with which body-related social comparisons were made, as well as the direction (positive or negative) of the body-related social comparisons. Bivariate correlations indicated that for both groups, more frequent comparisons were positively correlated with SPA, body dissatisfaction and appearance investment, and negatively correlated with body esteem and appearance evaluation. These findings are consistent with the idea that more frequent social comparisons would be

associated with more body image disturbances and body dissatisfaction (Bessenoff, 2006; Carlson Jones, 2001; Faith et al., 1997; Heinberg & Thompson, 1992; Trampe et al., 2007). The only two variables that were unrelated to frequency of social comparison were fitness evaluation and fitness investment. One possible explanation for the non-significant results is that fitness items may not have been as important as other variables regarding body image. It appears that social comparisons of appearance aspects are more influential on body image than fitness comparisons, reflecting the importance of appearance to body image. The more focus people place on appearance, the more likely they may be to make social comparisons in order to see how they are doing relative to others.

The final hypothesis examined the direction of the social comparisons made. It was hypothesized that regardless of exercise status, more positive social comparisons would be negatively related to SPA and body dissatisfaction, and more positively related to body esteem, appearance and fitness investment, and appearance and fitness evaluation. The hypothesis was supported for both non or infrequent exercisers and exercisers. Consistent with the hypothesis, when non or infrequent exercisers and exercisers made more positive social comparisons, they reported higher body esteem, appearance and fitness evaluation, and appearance and fitness orientation. Further, more positive comparisons were negatively related to SPA and body dissatisfaction.

These results are consistent with SCT, which predicts a positive outcome when people make positive social comparisons because people evaluate themselves as being better compared to the target (Wood, 1989). More positive comparisons allow people to try to make themselves better (Wood, 1989), resulting in positive body image attitudes. As the results of the current study suggest, people do feel better about their bodies when

they make positive social comparisons. Conversely, when participants in the current study made negative social comparisons, they felt worse about their bodies. This contention is supported by Martin Ginis et al. (2008) who found that women who made negative social comparisons experienced more negative affect than those who made positive social comparisons.

Finally, body image measures were used to predict both direction of social comparisons and frequency of social comparisons for each group. For non or infrequent exercisers, appearance orientation was a significant predictor of the frequency of social comparison. The more importance non or infrequent exercisers placed on their appearance, the more frequently they made social comparisons. The results of the current study support existing literature regarding SCT. For example, Festinger (1954) suggested that people engage in social comparisons in order to gain information about the self on dimensions that are important to the individual. According to the results of the current study, as appearance becomes more important to non or infrequent exercisers, they subsequently engaged in more social comparisons, perhaps to gain the most information about their appearance relative to others.

Also, SPA and body esteem-weight concerns were significant predictors of the direction of social comparisons in non or infrequent exercisers. More negative social comparisons were associated with higher levels of anxiety about the body and greater awareness of weight concerns. It is interesting to note that these specific predictors are both appearance-related concerns associated with body image, again highlighting the potentially negative impact of a focus on appearance. Similarly, Henderson King et al. (2001) found that people who made negative social comparisons evaluated themselves more negatively on body image measures.

For exercisers, SPA and appearance orientation were significant predictors of the frequency of social comparisons. Higher SPA and greater importance on appearance were associated with more frequent social comparisons in exercisers. Like non or infrequent exercisers, appearance orientation was associated with more social comparisons. However, unlike non or infrequent exercisers, higher SPA was also associated with more frequent social comparisons. As exercisers made more comparisons, they became more concerned that others would observe or evaluate their physiques. Faith et al. (1997) found that individuals who reported a greater tendency to make comparisons with others reported higher levels of body anxiety. Perhaps for exercisers, the opportunity for their bodies to be evaluated by others, and the opportunity to make social comparisons are increased. As a result, as appearance becomes more important, more social comparisons may occur (Festinger, 1954).

Body dissatisfaction, appearance orientation, and fitness orientation were significant predictors of the direction of social comparison. Higher body satisfaction and less importance placed on appearance and fitness were associated with more positive social comparisons in exercisers. It is important to note that all three of these body image constructs were within the cognitive dimension of body image which suggests that for exercisers, their thoughts on their body image may be most related to their social comparison tendencies. van den Berg et al. (2007) found that generally, when individuals are instructed to make social comparisons to others, they are negative, and negatively impact body image. For exercisers however, the opposite was found. Generally, correlational research has suggested that exercisers experience less body dissatisfaction than non-exercisers (Hausenblas & Fallon, 2006) and that exercise programs can improve appearance, health, and fitness evaluation (Henry et al., 2006), as well as body

satisfaction (Burgess et al., 2006; Depcik & Williams, 2004; Williams & Cash, 2001). Given exercisers were more satisfied with their bodies than non or infrequent exercisers, it was possible that exercisers were more satisfied with their fitness and appearance, therefore making more positive social comparisons.

Lastly, the unexplained variance in the regression analyses for both non or infrequent exercisers and exercisers needs to be addressed. First, personality variables could account for differences in social comparison tendencies. It is possible that some people are predisposed to make social comparisons. For instance, some people have a tendency to make comparisons to other people (i.e., high dispositional or trait social comparison; Thompson et al. (1991). It is possible that these personality characteristics could account for additional variance in the tendency to make social comparisons on body image. Another reason for the unexplained variance is that there may have been physiological differences among participants. It is possible that individuals with certain body types (e.g., overweight) they may consistently make negative body-related social comparisons as they are generally viewed as being further from the ideal in Western society. Likewise, if someone was very lean (i.e., close to the ideal), they may have made more positive comparisons based on appearance.

In summary, as social comparisons were more positive, they were associated with more positive body image outcomes in exercisers. For example, exercisers experienced less body dissatisfaction, they focused less on appearance, and focused less on being physically fit in comparison to non or infrequent exercisers. Also, for exercisers, social comparisons may not always be harmful (i.e., they may not experience negative effects on their body image).

Limitations to the Current Research

There were some limitations to the present study. The first limitation was the generalizability of the results. The sample for the current study was limited to college-aged women. Therefore, the results are only applicable to this group. Secondly, all data were self-reported, which led to the possibility of social desirability in the responses. This issue may have been particularly important due to the nature of the questions being asked. Specifically, Fallon and Hausenblas (2005) found that women with severe body image disturbances did not want to be suspected of these disturbances, and they were motivated to provide more socially acceptable answers. In order to minimize any anxiety that may have been caused by participants responding truthfully to questions regarding their body image and social comparison tendencies, participants were reminded prior to filling out the questionnaires that their data would remain anonymous and were also reminded and encouraged to respond truthfully to all questions.

In addition, the present study was correlational in nature. With correlational studies, causation cannot be determined. Although the results described the nature of the relationship between body image and social comparison, the results could not explain if body image attitudes cause differences in social comparison tendencies or if social comparison tendencies cause changes in body image, or both.

Another limitation was the length of the survey. Since there were numerous questionnaires in this study, participant fatigue may have been a concern. To account for the fatigue that may have occurred, questionnaires were counterbalanced to avoid any order effects. This way, if some participants experienced fatigue, the fatigue occurred at different sections within the questionnaire package.

The inclusion of only same-sex siblings or same-sex parents in the social comparison questionnaire may have been problematic. If participants did not have a same-sex sibling or parents, they could have either left those questions blank or chose "never." It was not possible to distinguish whether participants actually never made social comparisons with same-sex siblings or parents or if in choosing "never," it meant that they in fact did not have any same-sex siblings or same-sex parents. As a result, the relative importance of same-sex siblings and parents could have been underestimated.

One final limitation of this study was that although the study was comprehensive in nature (e.g., assessed many different targets and dimensions of social comparison), there were other targets of social comparisons, as well as other dimensions of comparison. Although the present study utilized the most frequently reported comparison targets (Schutz et al., 2002), it is possible that there were other people with whom college-aged women made comparisons that are were not addressed in the current study (e.g., same-sex adolescents, aunts, etc.). Similarly, other dimensions of comparisons may have also existed. However, participants were given the opportunity to cite any other comparison targets or dimensions with whom they might have made comparisons and the few other responses listed gives some confidence that the most relevant targets and dimensions were included.

Future Directions

Most research has examined social comparisons and body image in relation to adolescent and young adult females. Examining social comparisons and their effects on body image among males may provide greater understanding of the impact social comparison may have on men. There is evidence to suggest that men also suffer from

body image disturbances (e.g., Blond, 2008) and that these disturbances may be worsened by social comparisons. Similarly, future research could examine the types of comparisons among other populations including different age groups and those of different BMIs. For example, Hausenblas and Fallon (2006) found that the elderly body image concerns are more of a reflection of body functioning and physical capabilities rather than appearance oriented body image concerns. It is therefore possible that older adults would make more comparisons on non-appearance based dimensions of body image. Also, other populations may make more comparisons for different motives (i.e., self-enhancement rather than self-evaluation). Further, future research should examine the role that various activities (i.e., weight training, yoga, pilates, etc.) have on the social comparisons tendencies of young women and how those comparisons affect body image.

Other future directions may include examining behaviours in relation to body image and social comparison. Behaviours that are related to body image disturbance include eating disorders, wearing baggy clothing, avoiding social situations in which the body is the focus of attention (e.g., the beach), and checking behaviours (Bane & McAuley, 1998). These behaviours can have negative effects on one's health. Although the behavioural dimension of body image is the least examined dimension of body image (Hausenblas & Fallon, 2006), social comparisons may still affect the way in which people behave. For example, Greenleaf et al. (2006) found that negative social comparisons can lead to a decrease in the enjoyment of physical activities or cessation of activity all together. Supporting these findings, Wasilenko et al. (2007) found that people exercised for the shortest period time when a fit person was in close proximity due to unfavourable, negative social comparisons. Future work should investigate and understand how the behavioural dimension of body image is affected by social comparisons.

Finally, longitudinal data are needed to provide an indication of the causational progression of the relationships between social comparisons and body image, and the opportunity for testing models of social comparisons and body image. According to Carlson Jones (2001), longitudinal data are also necessary to more clearly determine the fundamental associations between social comparison and body dissatisfaction.

Implications

Implications for practice. The results of the current study have some practical implications. Greater importance placed on appearance and high SPA were associated with an increase in social comparisons by both groups. It is important to develop strategies to modify society's beliefs about the importance of thinness and develop prevention and intervention programs to reduce the number of body-related social comparisons women make. For example, developing programs where individuals can challenge the importance of weight and body shape may be important in understanding why people make so many body-related social comparisons. Programs where people are able to critique the media's pressure to be thin may be helpful for people to understand that media images are altered so that the "perfect" picture is the final product, perhaps resulting in fewer comparisons with unrealistic targets.

Non or infrequent exercisers made more negative comparisons than they did positive comparisons. One way to help reduce the number of negative comparisons would be to teach young adult females strategies to deal with the negative impact of social comparisons on their body image when they occur. Possible strategies include teaching the women to develop an appreciation for their body and understand that their unique body size and shape is something with which they should be comfortable. They could be

taught to come up with immediate ways to minimize the negative effects that come with negative social comparisons. Further, since exercisers in the current study made less negative social comparisons than non or infrequent exercisers, physical activity may be one way to reduce negative comparisons. However, caution should be applied when using an exercise intervention to reduce social comparisons. If a person is already prone to making numerous social comparisons, or negative comparisons, an exercise environment may increase the number of opportunities for comparisons that people may make. Finally, women may be taught to distance themselves from potential threatening situations regarding their bodies which would reduce negative social comparisons being made.

Since most of the participants in the study indicated that they had some concerns about their bodies through the body image questionnaires, individuals should be discouraged from making social comparisons, or at least make social comparisons on non-appearance (i.e., intelligence, personality, etc.) dimensions. If girls are subjected to strategies intended to discourage social comparisons, or at least promote positive social comparisons at younger ages, their body image may not be negatively affected by social comparisons (Hausenblas & Fallon, 2006, Reel et al., 2007). Further, they may experience a more positive body image throughout their lifetime.

Implications for theory. There are also some theoretical implications based on the current research. Firstly, the current study's results are consistent with previous research in social comparisons. Specifically, participants in the current study most often chose a comparison target that was similar to themselves, confirming the similar other hypothesis (Festinger, 1954). Secondly, it was found that most comparisons were negative in nature and more comparisons were leading to more body image disturbances on appearance-related dimensions (Martin Ginis et al., 2008; Wasilenko et al., 2007). Inconsistent with

SCT was that participants also picked models and celebrities as their comparison target relatively frequently, contrary to Festinger's hypothesis. Further, participants did not frequently report comparisons with siblings, a possible similar target. Little research has examined the role of social comparison with siblings, especially in relation to body image. Perhaps research within the field should consider investigating exactly why models and celebrities are so important and why siblings are unimportant when young female adults make their comparisons.

Implications for research. Perhaps the most important implication for research is that researchers should broaden the comparison targets that they use in experimental studies. Most research has focused on comparisons with models (e.g., Tiggemann & McGill, 2004; Tiggemann & Slater, 2004). This study suggests that there clearly other comparison targets that people use that may be just as, or more important than models and celebrities. Further, body shape and weight have been shown to be important body image constructs in relation to the outcomes of social comparisons. It is important to explore why body shape and weight have become so important in to college-aged females and the basis of numerous, negative social comparisons.

Conclusion

The present study found that the nature of social comparisons among college-aged female students did not vary much based on exercise group. Both groups made the most comparisons with same-sex peers and the fewest comparisons with same-sex parents and they both made more body-related, appearance-based comparisons than fitness-based comparisons. Few differences occurred in the types of social comparisons made; however, one difference occurred with the direction of comparisons. Exercisers made

more positive comparisons on body dimensions than non or infrequent exercisers. For both groups, more frequent comparisons were associated with more negative body image. Finally, more negative social comparisons were associated with higher levels of anxiety and greater importance on weight concerns for non or infrequent exercisers, while higher body satisfaction and less importance placed on appearance and fitness were associated with more positive social comparison in exercisers. This study suggests by changing negative social comparisons to positive social comparisons, or reducing body-related social comparisons, individuals may be able to experience a more positive body image.

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Appendix A:

The Questionnaire Package

Demographics

Please fill out the following information:

1. Gender _____
2. Age _____
3. Height _____
4. Weight _____
5. Major _____

How many days per week (in the last 6 months) on average do you exercise per week

_____

If any, please list the 3 activities in which you <u>most often</u> participate.

_____

_____

_____

Are you a Varsity Athlete? (please circle) Yes No

SPA

Read each of the following statements carefully and indicate the **degree to which the statement is characteristic or true of you.** Use the following scale. Circle the appropriate value for each statement.

1 = Not at all characteristic of me
2 = Slightly characteristic of me
3 = Moderately characteristic of me
4 = Very characteristic of me
5 = Extremely characteristic of me

	Not At All	Slightly	Moderately	Very	Extremely
1. I wish I wasn't so uptight about my physique/figure	1	2	3	4	5
2. There are times when I am bothered by thoughts that other people are evaluating my weight or muscular development negatively	1	2	3	4	5
3. Unattractive features of my physique make me nervous in certain social settings	1	2	3	4	5
4. In the presence of others, I feel apprehensive about my physique/figure	1	2	3	4	5
5. I am comfortable with how fit my body appears to others	1	2	3	4	5
6. It would make me uncomfortable to know others were evaluating my physique/figure	1	2	3	4	5
7. When it comes to displaying my physique/figure to others, I am a shy person	1	2	3	4	5
8. I usually feel relaxed when it is obvious that others are looking at my physique/figure	1	2	3	4	5
9. When in a bathing suit, I often feel nervous about the shape of my body	1	2	3	4	5

EDI-BD

Read each of the following statements carefully and indicate the **degree to which the statement is true of you.** Use the following scale. Circle the appropriate value for each statement.

1 = Always
2 = Usually
3 = Often
4 = Sometimes
5 = Rarely
6 = Never

	Always	Usually	Often	Sometimes	Rarely	Never
1. I think that my stomach is too big	1	2	3	4	5	6
2. I think that my thighs are too large	1	2	3	4	5	6
3. I think that my stomach is just the right size	1	2	3	4	5	6
4. I feel satisfied with the shape of my body	1	2	3	4	5	6
5. I like the shape of my buttocks	1	2	3	4	5	6
6. I think my hips are too big	1	2	3	4	5	6
7. I think that my thighs are just the right size	1	2	3	4	5	6
8. I think my buttocks are too large	1	2	3	4	5	6
9. I think that my hips are just the right size	1	2	3	4	5	6

BES

On this page are listed a number of body parts and functions. Carefully read each item and indicate how you feel about this part or function of **your own body** using the following scale:

1 = Have strong negative feelings
2 = Have moderate negative feelings
3 = Have no feeling one way or the other
4 = Have moderate positive feelings
5 = Have strong positive feelings

	Strong Negative	Moderate Negative	No Feelings	Moderate Positive	Strong Positive
1. Body Scent	1	2	3	4	5
2. Appetite	1	2	3	4	5
3. Nose	1	2	3	4	5
4. Physical Stamina	1	2	3	4	5
5. Reflexes	1	2	3	4	5
6. Lips	1	2	3	4	5
7. Muscular Strength	1	2	3	4	5
8. Waist	1	2	3	4	5
9. Energy Level	1	2	3	4	5
10. Thighs	1	2	3	4	5
11. Ears	1	2	3	4	5
12. Biceps	1	2	3	4	5
13. Chin	1	2	3	4	5
14. Body Build	1	2	3	4	5
15. Physical Coordination	1	2	3	4	5
16. Buttocks	1	2	3	4	5
17. Agility	1	2	3	4	5
18. Width of Shoulders	1	2	3	4	5
19. Arms	1	2	3	4	5
20. Chest or Breasts	1	2	3	4	5
21. Appearance of Eyes	1	2	3	4	5
22. Cheeks/Cheekbones	1	2	3	4	5
23. Hips	1	2	3	4	5
24. Legs	1	2	3	4	5
25. Figure or Physique	1	2	3	4	5
26. Sex Drive	1	2	3	4	5
27. Feet	1	2	3	4	5
28. Sex Organs	1	2	3	4	5
29. Appearance of Stomach	1	2	3	4	5

	Strong Negative	Moderate Negative	No Feelings	Moderate Positive	Strong Positive
30. Health	1	2	3	4	5
31. Sex Activities	1	2	3	4	5
32. Body Hair	1	2	3	4	5
33. Physical Condition	1	2	3	4	5
34. Face	1	2	3	4	5
35. Weight	1	2	3	4	5

MBSRQ

The following pages contain a series of statements about how people might think, feel, or behave. You are asked to indicate the extent to which each statement pertains to you personally. Please read each question and circle the appropriate number to the right. Please answer all of the questions.

1 = Definitely Disagree
2 = Mostly Disagree
3 = Neither Agree nor Disagree
4 = Mostly Agree
5 = Definitely Agree

	Definitely Disagree	Mostly Disagree	Neither	Mostly Agree	Definitely Agree
1. Before going out in public, I always notice how I look.	1	2	3	4	5
2. I am careful to buy clothes that will make me look my best.	1	2	3	4	5
3. I would pass most physical-fitness tests.	1	2	3	4	5
4. It is important that I have superior physical strength.	1	2	3	4	5
5. My body is sexually appealing.	1	2	3	4	5
6. I am not involved in a regular exercise program.	1	2	3	4	5
7. I like my looks just the way they are.	1	2	3	4	5
8. I check my appearance in a mirror whenever I can.	1	2	3	4	5
9. Before going out, I usually spend a lot of time getting ready.	1	2	3	4	5
10. My physical endurance is good.	1	2	3	4	5
11. Participating in sports is unimportant to me.	1	2	3	4	5
12. I do not actively do things to keep physically fit.	1	2	3	4	5
13. Most people would consider me good-looking.	1	2	3	4	5
14. It is important that I always look good.	1	2	3	4	5
15. I use very few grooming products.	1	2	3	4	5

	Definitely Disagree	Mostly Disagree	Neither	Mostly Agree	Definitely Agree
16. I easily learn physical skills.	1	2	3	4	5
17. Being physically fit is not a strong priority in my life.	1	2	3	4	5
18. I do things to increase my physical strength.	1	2	3	4	5
19. I like the way I look without my clothes on.	1	2	3	4	5
20. I am self-conscious if my grooming isn't right.	1	2	3	4	5
21. I usually wear whatever is handy without caring how it looks.	1	2	3	4	5
22. I do poorly in physical sports or games.	1	2	3	4	5
23. I seldom think about my athletic skills.	1	2	3	4	5
24. I work to improve my physical stamina.	1	2	3	4	5
25. I like the way my clothes fit me.	1	2	3	4	5
26. I don't care what people think about my appearance.	1	2	3	4	5
27. I take special care with my hair grooming.	1	2	3	4	5
28. I dislike my physique.	1	2	3	4	5
29. I don't care to improve my abilities in physical activities.	1	2	3	4	5
30. I try to be physically active.	1	2	3	4	5
31. I am physically unattractive.	1	2	3	4	5
32. I never think about my appearance.	1	2	3	4	5
33. I am always trying to improve my physical appearance.	1	2	3	4	5
34. I am very well coordinated.	1	2	3	4	5
35. I play a sport regularly throughout the year.	1	2	3	4	5

GLTEQ

1. Considering a **7-day period** (a week), how many times on the average do you do the following kinds of exercise for **more than 15 minutes** during your **free-time** (write on each line the appropriate number)?

Times Per Week

(a) STRENUOUS EXERCISE _____
(HEART BEATS RAPIDLY)
(i.e., running, jogging, hockey, football, soccer, squash, basketball, cross country skiing, judo, roller skating, vigorous swimming, vigorous long distance bicycling)

(b) MODERATE EXERCISE _____
(NOT EXHAUSTING)
(i.e., fast walking, baseball, tennis, easy bicycling, volleyball, badminton, easy swimming, alpine skiing, popular and folk dancing)

(c) MILD EXERCISE _____
(MINIMAL EFFORT)
(i.e., yoga, archery, fishing from river bank, bowling, horseshoes, golf, snow-mobiling, easy walking)

SC

Please read the following questions carefully. Using the scale below, circle the number which best describes you for each one.

1 = Never
2 = Rarely
3 = Sometimes
4 = Often
5 = Very Often

1. In general, how <u>often</u> do you compare your body with other people's bodies?

Never	Rarely	Sometimes	Often	Very Often
1	2	3	4	5

2. How <u>often</u> do you compare yourself with each of the following?

	Never	Rarely	Sometimes	Often	Very Often
a) Same-sex Friends	1	2	3	4	5
b) Same-sex Peers	1	2	3	4	5
c) Same-sex Siblings	1	2	3	4	5
d) Same-sex Parents	1	2	3	4	5
e) Same-sex Model/Celebrity	1	2	3	4	5
f) Other:	1	2	3	4	5

3. How <u>often</u> do you compare yourself with others on each of the following?

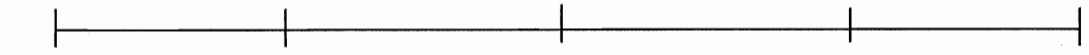
	Never	Rarely	Sometimes	Often	Very Often
a) Body Attractiveness	1	2	3	4	5
b) Fitness	1	2	3	4	5
c) Weight	1	2	3	4	5
d) Body Shape	1	2	3	4	5
e) Co-ordination	1	2	3	4	5
f) Strength	1	2	3	4	5
g) Muscle Mass or Tone	1	2	3	4	5
h) Other:	1	2	3	4	5

Please read the following question carefully. Using the appropriate scale below, circle the number which best describes the comparisons you make.

4. In general, when you compare your body to others, how do you rate your body?

Much More Negative	Somewhat More Negative	Neither Positive nor Negative	Somewhat More Positive	Much More Positive
-2	-1	0	+1	+2

5. Compared to the following groups of people, how do you usually rate yourself?



-2	-1	0	+1	+2
Much More Negative	Somewhat More Negative	Neither Positive Nor Negative	Somewhat More Positive	Much More Positive

	Much Worse	Somewhat Worse	Neither Better nor Worse	Somewhat Better	Much Better
a) Same-sex Friends	-2	-1	0	+1	+2
b) Same-sex Peers	-2	-1	0	+1	+2
c) Same-sex Siblings	-2	-1	0	+1	+2
d) Same-sex Parents	-2	-1	0	+1	+2
e) Same-sex Model/Celebrity	-2	-1	0	+1	+2
f) Other:	-2	-1	0	+1	+2

6. Compared to other people, how do you rate yourself on each of the following dimensions?

a) Physical Attractiveness	Much Less Attractive (-2)	Somewhat Less Attractive (-1)	Just as Attractive (0)	Somewhat More Attractive (+1)	Much More Attractive (+2)

b) Fitness	**Much Less Fit (-2)**	**Somewhat Less Fit (-1)**	**Just as Fit (0)**	**Somewha t More Fit (+1)**	**Much More Fit (+2)**

c) Body Weight	**Much Heavier (-2)**	**Somewhat Heavier (-1)**	**Neither Heavier nor Lighter (0)**	**Somewhat Lighter (+1)**	**Much Lighter (+2)**

d) Body Shape	**Much Larger (-2)**	**Somewhat Larger (-1)**	**Same Size (0)**	**Somewhat Smaller (+1)**	**Much Smaller (+2)**

e) Coordination	**Much Less Coordinated (-2)**	**Somewhat Less Coordinated (-1)**	**Just as Coordinated (0)**	**Somewhat More Coordinated (+1)**	**Much More Coordinated (+2)**

f) Strength	**Much Weaker (-2)**	**Somewhat Weaker (-1)**	**Just as Strong (0)**	**Somewhat Stronger (+1)**	**Much Stronger (+2)**

g) Muscle Mass or Tone	**Much Less Muscle Mass or Tone (-2)**	**Somewhat Less Muscle Mass or Tone (-1)**	**Just as much Muscle Mass or Tone (0)**	**Somewhat More Muscle Mass or Tone (+1)**	**Much More Muscle Mass or Tone (+2)**

f) Other:	**Much Less (-2)**	**Somewhat Less (-1)**	**Just as (0)**	**Somewhat More (+1)**	**Much More (+2)**

Appendix B:

Research Ethic Clearance

Research Ethic Clearance

DATE: November 17, 2008

FROM: Michelle McGinn, Chair
Research Ethics Board (REB)

TO: Kimberley GAMMAGE/VARGA, Physical Education and Kinesiology
Heather Varga

FILE: 08-122 GAMMAGE/VARGA
Masters Thesis/Project

TITLE: Social Comparison and Body Image in Exercisers and Non-Exercisers

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION: Accepted as clarified.

This project has received ethics clearance for the period of November 17, 2008 to December 31, 2009 subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The clearance period may be extended upon request. The study may now proceed.

Please note that the Research Ethics Board (REB) requires that you adhere to the protocol as last reviewed and cleared by the REB. During the course of research no deviations from, or changes to, the protocol, recruitment, or consent form may be initiated without prior written clearance from the REB. The Board must provide clearance for any modifications before they can be implemented. If you wish to modify your research project, please refer to http://www.brocku.ca/researchservices/forms to complete the appropriate form Revision or Modification to an Ongoing Application.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-Council Policy Statement requires that ongoing research be monitored. A Final Report is required for all projects upon completion of the project. Researchers with projects lasting more than one year are required to submit a Continuing Review Report annually. The Office of Research Services will contact you when this form Continuing Review/Final Report is required.

Please quote your REB file number on all future correspondence.

MM/an

Lori Walker
Senior Research Ethics Officer
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Appendix C:

The Recruitment Materials

Verbal Script

My name is Heather Varga. I am a Master's student of Dr. Kimberley Gammage and I am doing a study on social comparison and body image in exercisers and non-exercisers. This study is voluntary and you are free to withdraw at any time without consequences. To complete this study, you will be filling out a number of questionnaires and it should take about one hour of your time. If you would like to participate in this study, please contact myself at hv03kv@brocku.ca or Dr. Gammage at kgammage@brocku.ca to set up a time to complete this study. This study has received clearance from Brock University's REB (REB# 08-122). Thank you for your time.

Social Comparison and Body Image in Exercisers and Non-Exercisers

PURPOSE:

- The purpose of this research project is to examine social comparison and body image in exercisers and non-exercisers

PARTICIPANTS MUST BE:

- Female Brock University Students

WHAT IS INVOLVED

- Participants will be asked to fill out a number of questionnaires regarding comparisons made with others, body image, and exercise behaviour
- It will take approximately one hour of your time

BENIFITS:

- This study will further scientific knowledge regarding psychological states and exercise status

If interested, please contact:
Dr. Kimberley Gammage
905-688-5550 ext. 3772
kgammage@brocku.ca
OR
Heather Varga
heather.varga@brocku.ca

This study has been reviewed and received ethics clearance through the **REB (File #08-122).** For answers to pertinent questions about research participant's rights, please contact the Research Ethics Office at 905-688-5550 ext. 3035, reb@brocku.ca

Appendix D:

Letter of Invitation and Informed Consent

Brock University

Department of Physical Education and Kinesiology
St. Catharines, Ontario Canada L2S 3A1
Telephone 905-688-5550 Ext. 4358
Fax 905-688-8364

LETTER OF INVITATION

October 2008

Title of Study: Social Comparison and Body Image in Exercisers and Non-Exercisers

Principal Investigator: **Dr. Kimberley Gammage, Associate Professor**
Department of Physical Education and Kinesiology, Brock University

Principal Student Investigator: **Heather Varga, MA Candidate, Applied Health Sciences**

I, Kimberley Gammage, Associate Professor from the Department of Physical Education and Kinesiology, Brock University, invite you to participate in a research project entitled Social Comparison and Body Image in Exercisers and Non-Exercisers.

The purpose of this research project is to examine the comparisons people make with others and body image in exercisers and non-exercisers in a younger adult population.

The expected duration of this study is approximately one hour. You will be asked to complete a series of questionnaires.

This research should further the scientific knowledge of the differences in social comparison tendencies and body image between exercisers and non-exercisers within the scientific community. There are no known or anticipated risks associated with participation in this study

If you have any pertinent questions about your rights as a research participant, please contact the Brock University Research Ethics Officer (905 688-5550 ext 3035, reb@brocku.ca)

If you have any questions, please feel free to contact me.

Thank you

Dr. Kimberley Gammage
Associate Professor, Brock University
(905) 688-5550 Ext. 3772
kgammage@brocku.ca

Heather Varga
MA Candidate, Applied Health Sciences
heather.varga@brocku.ca

This study has been reviewed and received ethics clearance through Brock University's Research Ethics Board (file # 08-122]

Letter of Informed Consent

Date: October 2008
Project Title: Social Comparison and Body Image in Exercisers and Non-Exercisers

Principal Investigator:
Dr. Kimberley Gammage, Associate Professor
Department of Physical Education and Kinesiology
Brock University
(905) 688-5550 Ext. 3772, kgammage@brocku.ca

Principal Student Investigator
Heather Varga, MA Applied Health Science Candidate
heather.varga@brocku.ca

INVITATION
You are invited to participate in a study that involves research. The purpose of this study is to examine the comparisons people make to others and body image in exercisers and non-exercisers in a younger adult population.

WHAT'S INVOLVED
As a participant, you will be asked to give informed consent and answer a number of questionnaires regarding the comparisons you make with others, your body image, and exercise status. Debriefing and a request for results will be completed after the questionnaires are returned. Participation will take approximately one hour of your time.

POTENTIAL BENEFITS AND RISKS
Possible benefits of participation include furthering the scientific knowledge of different psychological states and exercise status. Some of the questions asked may make you uncomfortable as the subject matter is very sensitive. Should you feel the need to discuss the content of the questionnaires, you may contact Dr. Gammage at kgamma@brocku.ca or at 905-688-5550 ext. 3772. Also, Student Health Services are available as you see fit at 905-688-5550 ext. 3243.

CONFIDENTIALITY
All information you provide is considered anonymous; your name will not be included, or in any other way associated with the data collected in the study. Due to this fact, you will not be able to withdraw your data after you have completed and handed in the questionnaires. Furthermore, because our interest is in the average responses of the entire group of participants, you will not be identified individually in any way in written reports of this research. Data collected during this study will be stored on campus in a locked cabinet in Dr. Kimberley Gammage's office. Data will be kept for one year after which time all data will be shredded. Access to this data will be restricted to the principal investigator and the principal student investigator.

VOLUNTARY PARTICIPATION
Participation in this study is voluntary. If you wish, you may decline to answer any questions or participate in any component of the study. Further, you may decide to withdraw from this study at any time until you submit your questionnaire and may do so without any penalty or loss of benefits to which you are entitled. After you submit your questionnaire, you will not be able to withdraw as your questionnaire will not be identifiable.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available. For information regarding the results of this study, please fill out a request for results form at the conclusion of this study

CONTACT INFORMATION AND ETHICS CLEARANCE
If you have any questions about this study or require further information, please contact the Principal Investigator or the Student Principal Investigator using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University **(REB # 08-122)**. If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your assistance in this project. Please keep a copy of this form for your records.

CONSENT FORM
I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time.

Name: _____

Signature: _____ Date: _____

Appendix E:

Debriefing Form

Debriefing Form

Title of Study: Social Comparison and Body Image in Exercisers and Non-Exercisers

Principal Researcher: Dr. Kimberley Gammage, Associate Professor
Dept. of Physical Education and Kinesiology

Student Principal Investigator: Heather Varga, MA Candidate, Faculty of Applied Health Science

Contact Information: heather.varga@brocku.ca
kgammage@brocku.ca or (905) 688-5550 ext. 3772

Thank you for participation in this study. In this study, we were examining how the comparisons about one's body to other people are related to body image among exercisers and non-exercisers. You received a questionnaire package asking a variety of questions in order to assess your body image (how you think, feel about, and act towards your body). It also assessed the nature of your social comparison tendencies. For instance, it asked about who you most often make comparisons with (e.g., friends or celebrities), the direction of your comparisons (e.g., more positive or negative compared to others), and what specific comparisons you make (e.g., appearance, non-appearance). We were interested in looking at how these different types of comparisons affect your body image, and if these comparisons are different between exercisers and non-exercisers. Please remember that there is normal variability in body sizes and shapes within the population, and all different of body sizes and shapes are normal. If you have any questions about the study, please contact Heather Varga or Dr. Kimberley Gammage at the above e-mail addresses.

Thank you for your participation

This project has been reviewed by, and received ethics clearance through the Office of Research Ethic Board (File # 08-122)